GOVERNMENT OF INDIA
TARIFF COMMISSION

REPORT

on

Cost Structure of the Sugar Industry and the Fair Price for Sugar

BOMBAY, 1969

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REPORT

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COST STRUCTURE OF THE SUGAR INDUSTRY AND THE FAIR PRICE FOR SUGAR

BOMBAY, 1969

PERSONNEL OF THE COMMISSION

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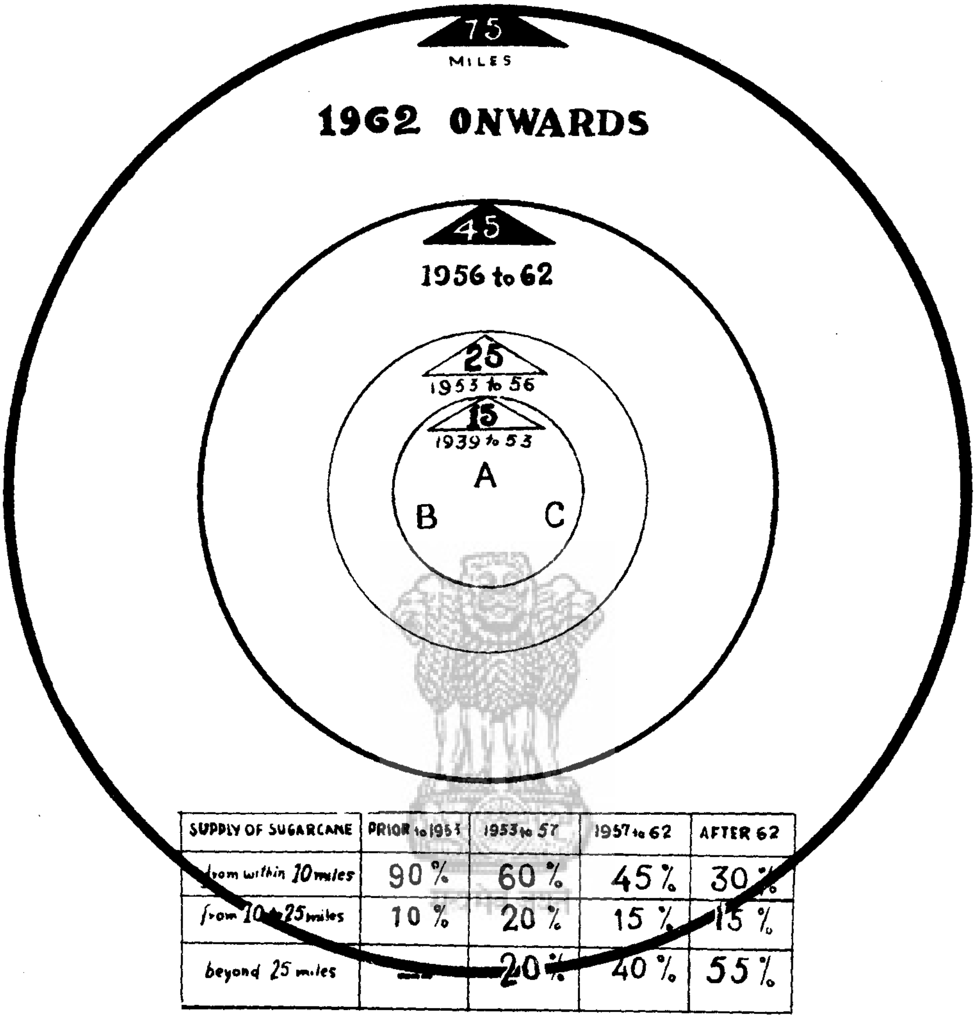

SUPPLY OF SUGARCANE	PRIOR to 1953	1953 to 57	1957 to 62	AFTER 62
from within 10 miles	90 %	60 %	45 %	30 %
from 10 to 25 miles	10 %	20 %	15 %	15 %
beyond 25 miles	—	20 %	40 %	55 %

How year by year the lead

INCREASED

NOTE: A, B and C denote suger factories

REPORT ON COST STRUCTURE OF THE SUGAR INDUSTRY AND THE FAIR PRICE FOR SUGAR

CHAPTER 1

INTRODUCTION

1.1. **Background.**—The Tariff Commission was requested for the first time in September 1958, to conduct an inquiry into the cost structure of and the fair price payable to the sugar industry. Its Report was submitted in 1959. The recommendations made were adopted by the Government who decided to make use of the cost schedules drawn up by the Commission to fix the control prices of sugar, where necessary. This necessitated suitable adjustments in the price linking formula for sharing sugar prices between sugar factories and cane growers which was until then, based on the cost schedule of the Industry prepared by the Naidu Committee (1953) and later amended by the Gopalakrishnan Committee (1956). A reference was, therefore, made for the revision of the formula to the Tariff Commission in October 1960 and the Commission submitted its Report in June 1961.

1.1.1. In August 1964, Government appointed the Sugar Enquiry Commission to make a comprehensive enquiry into the various aspects of the sugar industry, including the economics of sugar production and its cost structure. The Sugar Enquiry Commission with Dr. S. R. Sen as its Chairman, submitted its report in October 1965 and the cost schedules prepared by it were used by the Government for the fixation of *ex*-factory price of sugar during the years 1965-66 to 1968-69.

1.1.2. **Origin of the case.**—The Industry represented to the Government that the cost schedules prepared by the Sugar Enquiry Commission were based on the cost data (1963-64) which had become out of date. It also raised certain other issues advocating review of the schedules and some cognate matters. After consideration of this request the Government came to the conclusion that a fresh examination of the cost structure for the sugar industry and the preparation of new cost schedules to determine the fair price payable to the industry were necessary. Accordingly, the Government requested us under Section 12(d) of the Tariff Commission Act, 1951, to enquire into the matter and submit our report/recommendations to the Government. A copy of the Government of India, Ministry of Commerce Resolution dated 7th February 1968 is given in Appendix 1.

1.2. **Terms of reference.**—The main issues under the terms of reference as laid down in the Government Resolution cited above are the examination of cost structure of sugar and preparation of new cost schedules to determine the fair price payable to the sugar industry. In formulating its recommendations the Commission has been requested *inter alia* to enquire specifically into the following points :

(i) Should the classification of factories into zones be according to the recommendations of Sugar Enquiry Commission and, if not, on what other considerations ? What part crushing capacity of a factory should play in this classification ? What should be the zones into which the factories should be grouped, having regard to the basis of classification which may now be recommended by the Tariff Commission?

(ii) While preparing the cost schedules for price fixation, the Commission might recommend the basis on which the provision for depreciation should be made : Whether depreciation to be allowed in the cost structure should be calculated on replacement value or on the written down values of assets and how individual factories which modernise their plant or expanded their capacities should be compensated for the investment made?

(iii) Whether provision should be made in the price to compensate units situated in an area which, under free market conditions, would have an inherent advantage over units in other areas due to higher productivity and better efficiency ? If so, what should be the provision ?

(iv) Whether to encourage organised and efficient system of harvesting and quick transport of sugarcane from the fields to the factories, *ex*-field price for sugarcane should be fixed and provided for in the price of sugar?

(v) Whether and to what extent incentives should be given to compensate factories for the loss in recovery of sugar from sugarcane due to early start or working late into the hot weather.

(vi) How far the mechanism of price fixation can be used to induce growers to supply cane to sugar factories regularly irrespective of fluctuations in gur and khandsari prices?

1.3. **Method of inquiry.**—A detailed questionnaire was issued in March 1968 to all the sugar factories, associations of cane growers, sugar merchants and sugar consumers, seeking their views on various aspects of the inquiry. This was followed by a supplementary questionnaire in September 1968. A request was also made to the concerned Central and State Government Departments and the various associations of sugar producers to furnish comprehensive memoranda on the present position and problems of the sugar industry. The State Finance Corporations/Industrial Finance Corporation were also approached for information regarding loans granted to the sugar factories, and the Indian Standard Institution for the I.S.I. specifications on sugar. A letter was addressed to the Khadi and Village Industries Commission seeking their views/information regarding gur and khandsari. Research Institutes like the National Sugar Institute, Sugar Technologists' Association of India, Regional Office Sugarcane Development Council, Indian Institute of Sugarcane Research, Sugarcane Breeding Institute were also requested to furnish information on specific points relevant to the inquiry. Data/information from the Indian Embassies/High Commissions in selected foreign countries was also sought regarding certain points. A list of parties and organisations to whom questionnaires/letters were issued and from whom replies have been received is given in Appendix 2.

1.3.1. With a view to understanding the complexities of the regional problems facing the sugar industry it was considered necessary to have detailed discussions separately with important associations/organisations representing diverse interests. In this connection, the Commission met the representatives of the Regional Associations of Sugar Factories, Bombay Sugar Merchants' Association, All India Confectionery Manufacturers' Association, Maharashtra State Farming Corporation Ltd. etc. Discussions were held with certain individuals having expert knowledge of the industry and the concerned officers of the Ministry of Food and Agriculture and the Agricultural Prices Commission. In addition the Commission held on the spot discussions with the State Government during their visits to the different regions. The Commission also visited factories in Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Tamil Nadu and Maharashtra. A list of factories visited by the Commission is given in Appendix 3.

1.3.2. Taking into account the views of various producers' associations and the different factors affecting the cost of production, such as location, capacity, duration and recovery, 68 sugar factories were selected for detailed cost investigation. The costed units accounted for 34 per cent of total capacity and 37 per cent of the total production of sugar in 1966-67. The average duration of the costed units was 101 days and the recovery amounted to 9·73 per cent as compared to all India figure of 95 days and 9·91% recovery respectively. The list of 68 sugar factories together with the names of Cost Accounts Officers who examined their accounts is given in Appendix 4. Appendix 5 indicates capacity, production, duration and recovery of the costed units.

1.3.3. A public inquiry was held on October 31 and November 1, 1968. Further discussions were continued with various producers' associations, as well as the costing sub-committee of the Indian Sugar Mills' Association from time time. A list of persons who attended the public inquiry and group discussions is given in Appendix 6.

1.3.4. The delay in the submission of this Report was unavoidable. Apart from the inherent complexities of the issues involved, its preoccupation with other high priority enquiries referred to it subsequently, the Commission was handicapped by the paucity of officers and staff including a shortage at the Member level.

CHAPTER 2

STRUCTURE OF THE INDUSTRY

2.1. **Growth of the Industry.**—In our earlier Reports on the Industry, we have dealt with the organisational aspects in considerable detail. Briefly, the sugar industry had hardly 29 units with a total output of 1·21 lakh tonnes in 1931 when its case for protection was examined for the first time by the Tariff Board. Within about two years after the grant of protection, the number had risen to 111 and production to 4·61 lakh tonnes. At the end of World War II there were 136 active factories and they produced 9·57 lakh tonnes of sugar. In the next five years, *i.e.* by 1950-51 the number of factories remained more or less the same at 139, while production rose to 11·34 lakh tonnes. More than half of the total number of factories were concentrated in Uttar Pradesh and Bihar and another ten in Punjab, Rajasthan and Madhya Pradesh, in the sub-tropical belt. After 1952 new factories began to spread out in the tropical belt consisting of Maharashtra, Gujarat, Andhra Pradesh, Tamil Nadu, Mysore and Kerala. In the tropical belt the number rose from 31 in 1950-51 to 59 in 1960-61. In 1967-68, out of the 200 working sugar factories, there were 87 factories in the tropical and 113 factories in the subtropical belt. In these developments the most significant aspect relating to the structure of the industry was the rise of the co-operative sector. This is dealt with in later paragraphs. The overall effect of the development was that India changed from the position of a net importer in pre-war year to that of a net exporter in two decades.

At present there are in all 205 sugar factories with a capacity for the production of 34·69 lakh tonnes of sugar. The State-wise distribution of the working sugar factories during 1950-51, 1955-56, 1960-61 and from 1963-64 to 1967-68 is given in Appendix 7.

2.2. **Size of the unit.**—Judging by the criterion of 1250 tonnes of cane crushing capacity a day as the economic size of the unit, adopted by the Sugar Enquiry Commission, nearly one half of the total number of sugar factories in the country today can be called uneconomic. Should 1500 tonnes daily crushing capacity be adopted as the dividing line another 27 units might have to be considered uneconomic, leaving some 83 units in the economic category of which about 52 would be between 1,500 and 2,000 tonnes ; about 13 between 2,000 and 2,500 tonnes ; and the rest above 2,500 tonnes. Detailed data showing the distribution of factories according to the size, measured by installed capacity, licensed/registered under the Industries (Development and Regulation) Act, 1951 are given in Appendix 8.

2.3. **Licensing Policy.**—The system of licensing the units in the sugar industry began in the year 1952 under the Industries (Development & Regulation) Act, 1951. Since then the Government set up *ad hoc* committees to consider applications for grant of additional capacity in the Industry. These committees examined applications on the basis of certain basic principles indicated by the Government such as the availability of sugarcane in the area, potentiality of sugarcane cultivation, irrigational facilities, etc. The Negotiating Committee appointed by Government in 1960 for grant of licences for additional capacity was asked to give preference, other things being equal, to the establishment of co-operative factories. The Screening Committee established in 1964 was required to examine applications on the basis of the following principles:

(i) licences to be granted purely on merits of the project judged from all angles, particularly, availability of cane supplies, economic viability and capacity of the applicant to execute the project in the minimum time;

(ii) first preference to be given to expansion of existing units in order to improve their economy, by making uneconomic units economic or less uneconomic, and by making economic units more efficient;

(iii) second priority to licensing of new units for which preference to be given to co-operatives, subject to the conditions mentioned in (i) above ; new units to be established only in such areas as had sufficient cane for the capacity of the unit proposed to be set up or where there was a reasonable prospect of increasing the production of cane to the required extent within a foreseeable future ; the capacity of the new units to range from 1,200 to 2,000 tonnes of cane per day depending upon cane availability ; and

(iv) in licensing additional capacity, due regard to be given to integrated projects so that by-product industries could be set up alongside sugar factories.

2.4. The Sugar Enqiuiry Commission which was asked *inter alia* to inquire into the policy regarding licensing of new sugar factories and the expansion of existing ones, had estimated that the additional capacities that might have to be installed during the Fourth and the Fifth Plan periods, would work out to about 12·5 lakh tonnes and 18 lakh tonnes respectively and recommended that licensing might have to be suitably higher than this figure in view of the usual time-lag involved between licensing and establishment of capacity. Out of the capacity to be set aside for the expansion of existing units, first priority should be given to the expansion of uneconomic units having installed capacity of less than 1,250 tonnes per day. Regarding the need for expansion of these units whose capacity was above 1,250 tonnes each, the Sugar Enquiry Commission had recommended :—

'(a) only such factories which could, with small expansion, not exceeding 300/400 tonnes, become significantly more balanced than now, should be allowed such expansion;

(b) factories asking for further substantial expansion upto 2,000 tonnes should be permitted such expansion if it was established that they had taken requisite steps to improve the yield per acre of sugarcane from their existing reserved area ; and

(c) factories above 2,000 tonnes should not normally be permitted to expand unless these units fulfilled the condition laid down for units under (b) above and also satisfied the authority concerned that they would set up by-products industries like alcohol and pulp and supply a substantial portion of their sugar production for export.'

The Commission had also suggested proper technical examination of each application and the adoption of well defined criteria for location of new factories. *In this connection we would also like to emphasise the need to bring the uneconomic units which represent nearly half of the total number of the units in the industry to the economic size expeditiously.*

2.5. A representation was also received from the Industry that the policy of licensing additional capacity in the sugar industry had a vital bearing on the availability of cane supplies to the existing factories and that in Maharashtra State especially, the policy has had baneful effects on the cost structure of quite a number of the older units because of the establishment in their vicinity of new factories as also their subsequent expansion and the consequent shrinkage in cane supplies to the older units from their earlier established areas. The Industry, therefore, urged the Government to refer to us for examination the following specific issue pertaining to the grant of licences for additional capacity :

> "If and how far the policy of granting licences for additional capacities in the industry either by way of new units or expansion of existing factories has tended to affect the position of neighbouring existing factories and what measures should be taken to protect the interest of units already established and operating."

The Ministry of Food, Agriculture, Community Development and Co-operation have taken the view that the point raised by the Industry related to the licensing of additional capacity in the sugar industry and did not have a direct bearing on the question of cost structure of sugar which was the main subject of the enquiry by us. Further, it was pointed out that applications for industrial licences for establishment of new sugar factories and expansion of existing units are being carefully considered in consultation with the State Government concerned especially with regard to the availability of sugarcane in the area. A Screening Committee appointed by Government also looks into this and other relevant questions. In case of doubt about the availability of sugarcane and its future potentiality, a team is deputed to make an on-the-spot study before a final decision is taken. The Ministry therefore, decided that the additional point suggested by the Industry was not appropriate for inclusion in the terms of reference to us. In the circumstances, we are merely placing this point which seems *prima facie* to have some substance, on record for Government's information. (Chart-I).

2.6. **Capacity of the Industry.**—The total sugar production capacity in the country which was of the order of 16·68 lakh tonnes per annum at the beginning of the First Five Year Plan in 1950-51, increased to 17.77 lakh tonnes per annum by the end of that Plan (1955-56), and to 24.47 lakh tonnes by the end of the Second Five Year Plan (1960-61). The target capacity for the Third Five Year Plan was fixed at 35·60 lakh tonnes, but the actual effective capacity of the Industry in 1965-66 season was placed at 32.25 lakh tonnes. The total licensed capacity of the Industry at present in terms of sugar production, according to the Directorate of Sugar and Vanaspati, is 44.69 lakh tonnes as against 34.69 lakh tonnes of capacity installed by 1967-68 season. The State-wise installed capacity figures since 1950-51 to 1967-68 and the present licensed capacity figures are brought to gether in Appendix 9. A note outlining the basis of conversion of sugarcane crushing capacity to sugar manufacture is appended. (Appendix 9A).

2.7. **Expansion of the Industry.**—The capacity targets for the Plan periods and the actual production of sugar were as follows :—

TABLE 2.1

Capacity targets and actual production

(In lakh tonnes)

	Capacity Targets	Actual Production
1st Plan (1951—56)	20·3	18·9
2nd Plan (1956—61)	25·4	30·3
3rd Plan (1961—66)	35·6	35·5
4th Plan (Draft) (1966—71)	45·0	. .

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Source : 1. Development Programme of Sugar Industry.
2. Directorate of Sugar & Vanaspati.

In order to achieve the targets of production in the Plan periods licences for additional capacity were granted to the existing factories for expansion and for also establishment of new factories. To achieve the draft Fourth Plan target capacity (1966-71) of 45 lakh tonnes, a total additional annual sugar production capacity of 27.63 lakh tonnes (excluding that revoked from time to time) has been licensed. We understand that between 1954 and August 1968 an additional capacity of 1339 lakh tonnes, in terms of sugar, has been licensed for expansion and 14.24 lakh tonnes for the establishment of new units. We further gather that 7.84 lakh tonnes of the sanctioned expansion has been completed and 10.06 lakh tonnes of new capacity already installed.

2.8. We have more recently been informed that the Planning Commission has envisaged a production target at 47 lakh tonnes for 1973-74. This output of sugar is to be achieved partly through expansion of existing units and partly through the establishment of new units primarily in the co-operative sector.

2.9. **Co-operative sector in the sugar industry.**—The history of the modern co-operative sugar factories dates back to 1933. Although by 1935 four co-operative sugar factories were established, this sector remained insignificant till 1955-56. In the subsequent years, however, there was a rapid expansion of the co-operative sector from three units in 1955-56 to 30 in 1960-61, 52 in 1965-66 and 57 in 1967-68. Such remarkable growth can at least in part be attributed to a combination of exceptional circumstances, such as better cultivation of sugarcane owing to availability of perennial irrigation, the removal of conflict of interests between the factory and the farm as well the receipt of substantial State aid especially in the matter of finance. The co-operative sector has thus been successful in the South in general and Maharashtra in particular. Appendix 10 shows the comparative growth and geographical distribution of the co-operative as well as the joint stock sectors.

2.10. It has been reported that recently licences were issued for setting up 12 factories in the State of Maharashtra and one in Gujarat and that applications for four more in Maharashtra are awaiting clearance by the Central Government. Letters of intent have been issued for the establishment of three new co-operatives, one in Gujarat and the other two in Maharashtra. It is estimated that sugar production in Maharashtra will increase by 240,000 tonnes with the establishment of the 12 new sugar factories.

2.11. The following table shows the distribution of working co-operative sugar factories according to the installed capacity :

TABLE 2.2

Installed daily cane crushing capacity in 1967-68

State	500 to 1000 Tonnes	1001 to 1,500 Tonnes	Above 1500 Tonnes	Total No. of factories
1	2	3	4	5
A. *Sub-Tropical*				
Punjab	..	3	..	3
Haryana	..	2	..	2
Uttar Pradesh	..	2	2	4
Assam	1	..	..	1
TOTAL A .	**1**	**7**	**2**	**10**

1	2	3	4	5
B. *Tropical*				
Andhra Pradesh . . .	1	5	2	8
Gujarat	..	4	..	4
Tamil Nadu	..	5	1	6
Maharashtra	..	16	6	22
Mysore	..	3	1	4
Kerala	..	2	..	2
Orissa	..	1	..	1
TOTAL B .	**1**	**36**	**10**	**47**
GRAND TOTAL (A + B) .	**2**	**43**	**12**	**57**

Source : Directorate of Sugar and Vanaspati.

2.12. **Production.**—The following table brings together the comparative data relating to the production of sugar in the co-operative and joint stock sectors respectively since 1950-51 :

TABLE 2·3

Production of sugar in the co-operative and joint-stock sectors

(In lakh tonnes)

Year	Production of sugar in			Percentage share of Co-operative to total
	Co-operative Sector	Joint stock Sector	Total	
1950-51	0·05	11·29	11·34	0·4
1955-56	0·26	18·64	18·90	1·4
1960-61	4·43	25·86	30·29	14·6
1965-66	9·10	26·44	35·54	25·6
1966-67	6·33	15·17	21·50	29·4
1967-68	6·83	15·39	22·22	30·7

Source : National Federation of Co-operative Sugar Factories and Directorate of Sugar & Vanaspati.

It may be seen from the above table that the percentage share of the co-operative sector in the national production of sugar rose rapidly between the years 1955-56 and 1965-66. By 1967-68 the share further increased to 30.7 per cent.

2.13. The following table shows the percentages of production of different grades of sugar by co-operative sugar factories in major States in 1965-66.

TABLE 2·4

Percentage of production of different grades of sugar by co-operative sugar factories in 1965-66.

(Figures in percentage)

Name of the State	B-30	C-30	D-30	E-30	C-29	B-29	E-29	E-27	Raw
Andhra Pradesh .	..	..	21·5	71·6	..	1·7	4·0	..	..
Assam . . .	..	..	..	3·3	..	76·2	20·4	..	..
Gujarat . . .	..	39·8	52·7	6·1	..	..	..	..	..
Tamil Nadu . .	..	..	3·0	67·6	..	4·1	22·7	..	..
Mysore . . .	..	6·5	20·5	26·6	..	27·8	18·2	..	..
Punjab & Haryana .	2·0	36·0	43·5	12·8	2·5	2·3	..	..	..
Maharashtra . .	..	11·8	47·8	14·5	..	3·6	1·2	..	20·4
Uttar Pradesh . .	2·1	51·6	11·4	29·8	1·5	2·1	1·2	..	..
Orissa	..	..	16·4	62·3	..	20·3	..	1·0	..
Kerala	..	..	..	95·7	..	..	4·3	..	..

Source : National Federation of Co-operative Sugar Factories.

2.14. The co-operative sector has also played a prominent role in the manufacture of raw sugar for export as is evident from the figures given in the following table :

TABLE 2·5

Exports of raw sugar

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(In lakh tonnes)

Year	Co-operative	Joint Stock	Total raw sugar	Percentage of Co-operative sector to total raw sugar production
1962-63	0·81	1·21	2·02	40·1
1963-64	1·07	1·36	2·43	44·0
1964-65	1·40	1·15	2·55	54·9
1965-66	1·03	3·11	4·14	24·9
1966-67	1·50	0·75	2·25	66·7
1967-68	0·70	0·25	0·95	73·7

Source : Review of the Working of the Co-operative Sugar Factories.

2.15. **Co-operation between the growers and the co-operative factories.**—It has been claimed that the success of the co-operatives, particularly in the tropical belt, is largely due to their efficiency in the operations relating to cane development, harvesting, transporting and processing. We have been informed that a large number of growers' co-operative sugar factories maintain a fair complement of agricultural staff for effectively supervising the harvesting and transporting of cane. They advise the growers on planting of improved varieties, use of insecticides and pesticides, irrigation development etc. Some factories render certain other services also to their members such as distribution of credit and fertilisers, construction of roads and maintenance of tractor units for ploughing the fields of the members.

2.16. **Share capital and financing of block capital.**—The National Co-operative Development Corporation provides central assistance by way of long term loans to the State Governments so as to enable them to participate in the share capital of the co-operative sugar factories. Under the above scheme, the State Governments are eligible for a loan of Rs. 35 lakhs per factory, on the condition that an equivalent amount is raised by the Society from its members (other than State Government). The capital cost of a sugar factory with a cane crushing capacity of 1250 tonnes per day is estimated to be between Rs. 200 lakhs and Rs. 220 lakhs and this cost is met by raising share capital of Rs. 35 lakhs to Rs. 40 lakhs from members, Rs. 35 lakhs from the State Government, Rs. 120 lakhs as block capital from the Industrial Finance Corporation of India and from Life Insurance Corporation of India and Rs. 10 to 15 lakhs as medium term loans from co-operative banks.

2.17. The most significant aspect of the financial mechanism of sugar co-operatives is the adoption of the device which helps in capital formation and brings a sizeable accumulation of funds once the factory comes into production. As a general rule a fixed amount ranging from Rs. 3.50 to Rs. 5.00 per tonne of cane supplied is deducted as compulsory deposit from the price payable to members by the co-operative sugar factories. On an average, a co-operative sugar factory with a daily crushing capacity of 1,000 tonnes is able to accumulate Rs. 5 lakhs annually in this way and the deductions are subsequently converted into share capital of the respective members. The total deductions on this account at the end of 1966-67 are said to have been of the order of Rs. 11.38 crores. Besides such compulsory deposits, a substantial provision is also made for depreciation and other reserves. These measures are said to have enabled the co-operative sugar factories to accumulate as on 30th June, 1967, internal resources to the tune of Rs. 62.56 crores as against their block assets of Rs. 79.32 crores.

Out of the total sanctioned loans of Rs. 51.47 crores, the amount actually drawn by the co-operatives was of the order of Rs. 39.69 crores and as on 31-3-1968, the repayments amounted to Rs. 14.82 crores. As a matter of fact eight factories, three in Maharashtra, two in Gujarat, one each in Haryana, Punjab and Uttar Pradesh have fully repaid the Industrial Finance Corporation loans much ahead of the scheduled period of repayment. This is indicative of the fact that the performance of the co-operatives as such has been generally satisfactory.

2.18. The total share capital of the co-operative sugar factories in the country as a whole as on 31-12-1968 was as below :

TABLE 2·6

Share capital of the cooperative sugar factories

(Rs. in lakhs)

Class of Share-Holders	Subscription
1. Producer-Members	20,93
2. Non-Producer Members	42
3. Co-operative Institutions	1,97
4. Others	11
5. State Governments	14,04
TOTAL	37,47

Source : National Federation of Co-operative Sugar Factories.

2.19. It is reported that the Central Financing Institutions are finding it difficult to provide loans for the establishment of sugar factories, and that the Central Government have informed the prospective applicants for industrial licences that their cases would be considered if the new projects could be established without seeking the assistance from the above mentioned Institutions. Fearing that this policy might adversely affect the co-operative sector, the National Federation of Co-operative Sugar Factories has put in a plea against it.

2.20. It is further reported that out of the loans sanctioned by the Industrial Finance Corporation an appreciable part has had to be cross mandated to the Life Insurance Corporation. This, we are told, has created certain procedural difficulties leading to delays in the implementation of their programme. It appeared that the matter has been taken up by the National Federation of Co-operative Sugar Factories with the I.F.C. and the National Co-operative Development Corporation with a view to making the necessary funds available to the co-operatives in time. We hope the matter is receiving sympathetic consideration from the concerned authorities.

CHAPTER 3

SUGARCANE

3.1. **When compared to the price of other agricultural products, sugarcane as a cash crop generally offers a better return.**—With increase in irrigation and improvement in varieties of sugarcane as well as other facilities offered to the cane cultivator, *the area under sugarcane has, over the course of years, tended steadily to rise. Nevertheless, the acreage has not been stable.* Periodically it rises to a level where the production is in excess of demand. This depresses prices and sometimes even places the growers in distress, and in the next sowing, the area tends to shrink. The fall in area results in lower production leading to inadequate supply of cane both to gur and khandsari manufacturers as well as to sugar factories, leading to a rise in prices of sugarcane. This again encourages cultivators to increase the area under cane in preference to other crops and the next phase ensues.

3.2. **Area.**—*A four year cycle, two of reduced area, followed by two of expansion has thus been the characteristic feature of sugarcane cultivation*; during the last decade too, the same pattern has repeated itself. Since a plant crop is followed by ratoon or intercrop, a two year phase is thus established. *When the area is extensive and the production exceeds demand, measures to discourage over-production of cane are taken; on the other hand, when the area falls, incentives for increase are provided.*

3.3. The high production in 1960-61 led the Central Government to restrict factory-wise production of sugar in 1961-62 to 90 per cent of the best production of the preceding two years. In the two subsequent seasons the area and production both fell below expectation necessitating the reimposition of statutory control on sugar prices in 1963; movement of gur was banned in order to depress its demand and to make available the cane so released for sugar factories. The Central Government encouraged the production of sugar also by allowing rebates in excise duty to factories which registered a high lievel of production. Higher prices were fixed for cane and transport deductions were restricted to a lower level. In Uttar Pradesh growers were required to supply two-third of their production to the sugar factories. Licensing of khansari units and new power crushers was stopped and the working of the existing units was restricted. This resulted in a very considerable rise in area and production of cane in the two years 1964-65 and 1965-66. However, for the first time in many years the increased area and consequent high production of sugar did not occasion undue alarm. But drought conditions in cane growing areas in the sub-tropical region brought about a recurrence of the cycle.

3.4. The following table gives the figures of phased averages for the last ten years.

TABLE 3.1

Area under Sugarcane

Year	Area in '000 hectares	% with Base 1958-59 =100	Average of the two years
1958-59	1948	100	2043
1959-60	2137	110	
1960-61	2413	124	2435
1961-62	2456	126	
1962-63	2242	115	2245
1963-64	2249	115	
1964-65	2562	132	2671
1965-66	2780	143	
1966-67	2301	118	2169
1967-68	2037	105	

Source : (i) Directorate of Economics and Statistics.
(ii) Sugar Enquiry Commission.

In the years 1966-67 and 1967-68 the shrinkage in area following plentiful production in the two preceding years and the consequent fall in price was accentuated in the sub-tropical belt by unprecedented droughts and the inclination of the cultivator to utilise whatever resources were available for growing foodgrains from which a better return was by then generally expected. *The prospects are that the years* 1968-69 *and* 1969-70 *will be years of plenty followed again by two lean years.* It has been reported that the area and production of sugarcane in the year 1968-69 have increased by over 20 per cent and 23 per cent respectively compared to the revised estimates of 1967-68. Particulars of the area under sugarcane in each of the States from the year 1949-50 to 1967-68 are given in Apendix 11.

3.5 **Regional distribution of area.**—Uttar Pradesh still continues to have the major share of the area under sugarcane though it has gone down from 59 per cent in 1950-51, 55 per cent in 1960-61 and 53 per cent in 1965-66 to the all time low of 49 per cent in 1967-68. Punjab and Haryana together come next with 11 per cent of the area in 1960-61, which rose to 13 per cent in 1967-68. Maharashtra has now 8 per cent of the total area, Bihar and Andhra Pradesh 6 per cent each, Tamil Nadu 5 per cent and Mysore 4 per cent. Percentages of the area under sugarcane in each of the States are also given in Appendix 11. These are summarised below for selected years.

TABLE 3.2

Regional distribution of area under sugarcane

(In percentage)

	1950-51	1960-61	1965-66	1966-67	1967-68
Uttar Pradesh . .	59·4	55·1	53·4	51·7	48·7
Haryana & Punjab . .	8·8	11·1	12·6	13·4	13·0
Maharashtra . . .	4·4	6·4	5·8	7·0	8·2
Andhra Pradesh . .	4·2	3·8	4·9	4·7	5·7
Bihar	9·7	7·7	6·1	6·5	5·7
Tamil Nadu . . .	2·9	3·4	3·1	3·8	4·7
Mysore	2·5	3·0	2·8	3·3	3·9
Others	8·1	9·5	11·3	9·6	10·1
TOTAL .	100	100	100	100	100

3.6. **Cropping pattern.**—It is necessary at this stage to enter a few qualifications in respect of the concept of area. In the sub-tropical region cane is a crop of eight to twelve months' duration; sowing is done in January-March and harvesting from middle of October to March. The time-cycle of area under this crop and also of the duration from sowing to maturity almost coincides. There is no area which is not likely to be harvested within a given agricultural year. The area under cane is therefore, the total area occupied by the cane crop; production is reckoned for the entire area, and the yield factor is a simple division of the total production in a given year by the total area under cane. On the other hand, in the tropical region and typically in Maharashtra, the concept is more complex. The three broad classifications of the crop are "adsali", "pre-seasonal" and "seasonal" with seasons for sowing and harvesting as folllows :

Type of crop	Planting	Duration	Harvesting
Adsali . .	15th July to 15th September	15 to 18 months	Mid October to end of December
Pre-seasonal .	15th October to 15th November	15 to 17 months	1st January to end of February
Seasonal .	15th January to 15th March	13 to 14 months	February/March
Ratoon . .	15th January to 15th March	14 to 15 months	1st March to mid April

Source : Government of Maharashtra, Department of Agriculture & Co-operative Development.

3.7. There is an overlap of about six months when the previous year's crop is becoming mature and the current year's plantings are in the early stages of growth. With the requirement of inter-cropping before the next planting, three times the area harvested in any year is needed to maintain a regular pattern of production, in the case of adsali and somewhat less for other cane sowings. *The apparent advantage of high yield in the tropical region is thus to a large extent neutralised by the proportianately greater land use when compared to similar factors for the sub-tropical region.* Compared to other food crops the area under cane is small since it constitutes only about 1·79 per cent of the total cropped area. State-wise proportion of the area under sugarcane in 1965-66 is as follows :

TABLE 3·3

Geographical area of cropped area and area under sugarcane in important States

(In '000 hectares)

Sl. No.	Name of the State	Total Geographical area	Total cropped area	Area under sugarcane 1965-66	Cane area as % age to total cropped area 1965-66
1	2	3	4	5	6
	Sub-Tropical				
1.	Uttar Pradesh	29437	22074	1490	6·75
2.	Bihar	17401	10760	170	1·58
3.	Punjab & Haryana . . .	12201	9395	350	3·72
4.	Rajasthan	34227	14971	57	0·38
5.	Madhya Pradesh . . .	44346	17786	78	0·44
6.	West Bengal	8768	6391	39	0·61
7.	Others (Assam, Jammu & Kashmir Nagaland and Union territories)	51823	4933	44	0·89
	(A) TOTAL .	198203	86310	2228	2·58
	Tropical				
1.	Maharashtra	30727	18975	161	0·85
2.	Tamil Nadu	12997	7066	86	1·22
3.	Mysore	19176	10398	77	0·74
4.	Andhra Pradesh . . .	27524	12091	136	1·12
5.	Others (Gujarat, Kerala and Orissa)	38182	20058	92	0·46
	(B) TOTAL .	128606	68588	552	0·80
	ALL INDIA (A + B) .	326809	154898	2780	1·79

Source : Indian Agriculture in Brief.

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It would be observed that Uttar Pradesh has the largest area under cane followed by Punjab and Haryana.

3.8. **Production.**—Production of sugarcane has more than doubled during the first three Plan periods; from 50·17 million tonnes in 1949-50, it went upto 119·64 million tonnes in 1965-66. As in the case of area taking the last ten years as a whole, production was high in the two yearly period from 1960-61 and 1961-62 and again in 1964-65 and 1965-66 and low in others. While fluctuations in area occurred more or less as result of comparative advantages of sugarcane cultivation, production has also been affected by season, rainfall and other agronomic factors such as varieties of cane sown and also the incidence of disease. The following figures show the relative changes between area and production over the last ten years.

TABLE 3·4

Production of sugarcane with percentage

Year	Production '000 tonnes	Average of two years	Production as percentage of 1958-59	Average of two years	Percentage of area with 1958-59 as base
1958-59	86149	88772	100	103	100
1959-60	91394		106		110
1960-61 . . .	110544	107256	128	125	124
1961-62	103967		121		126
1962-63	91913	98069	107	114	115
1963-64	104225		121		115
1964-65	119598	119620	139	139	132
1965-66	119642		139		143
1966-67	92826	94855	108	110	118
1967-68	96884		112		105

Source : Directorate of Economics and Statistics.

3.9. **Regional distribution.**—At the beginning of the decade the share of Uttar Pradesh in production was almost half but it has now gone down to about two-fifths. Other States and particularly Maharashtra, Mysore and Tamil Nadu have in the course of years increased their contribution significantly as the following figures show.

TABLE 3·5

Regional distribution of production

(In '000 tonnes)

		Uttar Pradesh	Bihar	Punjab & Haryana	Maharashtra	Andhra Pradesh	Mysore	Tamil Nadu	Others	Total
1958-59	Production	42419	6152	7615	9025	6790	3765	4154	6229	86149
	Percentage	49·2	7·1	8.8	10·5	7·9	4·4	4·8	7·3	100
1959-60	Production	44442	6751	8935	9368	6294	4411	4257	6936	91394
	Percentage	48.6	7·4	9·7	10·3	6·9	4·8	4·7	7·6	100
1960-61	Production	54516	7038	10579	12089	6748	5184	6311	8079	110544
	Percentage	49·3	6.4	9·6	10·9	6.1	4·7	5·7	7·3	100
1961-62	Production	51257	6330	8870	10995	7266	5789	5818	7642	103967
	Percentage	49·3	6.1	8.5	10.6	7·0	5·6	5·6	7·3	100
1962-63	Production	43197	4877	8027	10667	7217	5810	4262	7856	91913
	Percentage	47·0	5·3	8.7	11.6	7·9	6·3	4·6	8.6	100
1963-64	Production	47546	5165	8931	11513	9715	6978	5743	8634	104225
	Percentage	45·6	4·9	8.6	11.0	9·3	6·7	5·5	8·4	100
1964-65	Production	56242	6859	11330	9925	12184	5993	6480	10585	119598
	Percentage	47·0	5·7	9·5	8·3	10·2	5·0	5·4	6·9	100
1965-66	Production	56650	6045	12940	10410	10319	6137	6618	10523	119642
	Percentage	47·3	5·1	10.8	8·7	8.6	5·1	5·5	8·9	100
1966-67	Production	39370	4398	9460	9977	8033	6931	6897	7760	92826
	Percentage	42·4	4·7	10·2	10·7	8·7	7·5	7·4	8·4	100
1967-68	Production	39998	4031	10070	10673	9566	7586	7559	7401	96884
	Percentage	41·3	4·2	10·4	11·0	9·9	7·8	7·8	7·6	100

Source : Directorate of Economics & Statistics.

3.10. Since Uttar Pradesh still continues to have the major share in production—the State with the next highest production having only about one-fourth of that volume to its credit—the pattern of production for the country as a whole is swayed by the trends obtaining in that State. However, when the figures are examined individually the results do not in certain cases coincide with the features which emerge for the country as a whole. Particulars of production for each State together with percentage are given in Appendix—11.

3.11. **Varietal distribution of cane.**—*Improved varieties of sugarcane mostly developed by the Research Stations are being used in almost all the States.* Co. 419 appears to have the greatest coverage in the tropical region, next comes Co. 740 which is sown in more than half the area of Maharashtra. The varieties used in the North are mostly Co. 312, B.O. 17, CoS. 510, B.O. 3, Co. 527, B.O. 32 and Co. 313. The percentage figures of the area under the major varieties as in 1965-66 are given below. Details of the area under each variety in each of the major cane growing States are given in Appendix—12.

TABLE 3·6

Percentage of area under major varieties of cane 1965-66

Variety No.	Uttar Pradesh	Maharashtra	Andhra Pradesh	Tamil Nadu	Bihar	Mysore	Punjab
Co. 312	20·7	..	..	..	..	..	30·5
B.O. 17	14·9	..	..	..	17·4	..	..
COS 510	11·3	..	..	..	..	..	..
B.O. 3	6·8	..	..	..	15·6	..	..
Co. 527	5·6	..	14·3	..	..	..	..
B.O. 32	3·8	..	..	..	34·2	..	..
Co. 313	3·6	..	..	..	..	..	..
Co. 740	..	59·7	..	..	..	..	..
Co. 419	..	37·0	62·9	78·3	..	81·0	..
Co. 997	..	..	14·1	..	..	..	..
Co. 449	..	..	..	10·1	..	..	..
Co. 658	..	..	..	8·1	..	..	..
B.O. 14	..	..	..	..	8·8	..	..
B.O. 29	..	..	..	..	7·3	..	..
HM 320	..	..	..	..	..	2·8	..
Co. 453	..	..	..	..	..	..	8·5
Co.L 9	..	..	..	..	..	..	8·2
Co.L 29	..	..	..	..	..	..	5·9

Source : Regional Office of Sugarcane Development.

3.12. **Yield.**—*Sizeable fluctuations in average yield have been witnessed over the course of the decade under review in almost all States, except Tamil Nadu. The tropical regions continue to register yields from about* 65 *tonnes to* 96 *tonnes per hectare.* The yield in Maharashtra was 84 tonnes per hectare in 1963-64 but it went down to as low as 62·2 tonnes per hectare in 1966-67 but marginally recovered to 63·4 in the last year· On the other hand, yields in Mysore went up progressively from 63·8 tonnes per hectare in 1958-59 to 95·5 tonnes per hectare in 1967-68. Andhra Pradesh also appears to be coming up equally well though its best achievement of the average yield of 91·2 tonnes per hectare in 1958-59 has not been matched since. Though Orissa is in the tropical belt, its average yield has only been about 50 tonnes per hectare which is much less than those of other States in the same belt although higher than those of sub-tropical regions. *But for a setback in* 1966-67 *the trend of yield in Uttar Pradesh has been fluctuating and it registered the level of* 40·3 *tonnes per hectare in* 1967-68 *which was otherwise a bad year. Bihar, Punjab and Haryana have in this respect closely followed the pattern of Uttar Pradesh.* Rajasthan which has only a small share in sugar production has done the worst with only the average of 12·2 tonnes per hectare in 1966-67, though it registered as much as an average of 25·4 tonnes per hectare in 1962-63. *The disparity in yields between the sub-tropical and tropical regions is evened out to a certain extent by the fact that in addition to larger inputs the longer maturity period in the tropical regions requires as much as twice the area with half of it under overlapping cane crop. It cannot, therefore, be concluded that the tropical belt is basically more suitable than the sub-tropical one for the Production of cane.* Particulars of average yield for the different States for the period covered by the data for area and production are given in Appendix—13.

3.13. **Comparative yields.**—Yield depends to a large degree on the facilities for irrigation, management of the crop and input of fertilizers. The major factor—irrigation—is unfortunately not uniform in the country. In the North where irrigation facilities exist yields upto 227 tonnes per hectare have been recorded in Uttar Pradesh. It is claimed by some that with the extension of irrigation the yields all over the country would tend to become uniform. Average yields in other major cane growing countries of the world based on the figures of 1961-62 and compared to those of the chief cane growing States of India for the same year as well as with the best yields in recent years are as follows :

TABLE 3·7

Yield compared to that of other countries

Country	Yield per hectare in tonnes (1961-62)	State	Yield per hectare in tonnes (1961-62)	Best year	Yield per hectare
1	2	3	4	5	6
Hawaii	198·6	Uttar Pradesh	37·6	1964-65	40·5
U.A.R.	96·9	Bihar	32·1	1964-65	41·4
British Guinea . .	82·5	Punjab & Haryana	32·6	1964-65	41·9

1	2	3	4	5	6
Indonesia . .	75·9	Maharashtra .	71·4	1963-64	84·0
Puerto Rico . . .	73·4	Mysore . .	74·6	1967-68	95·5
Mauritius . . .	62·5	Tamil Nadu .	76·8	1967-68	79·4
Australia . . .	61·5	Andhra Pradesh	75·9	1958-59	91·2
U.S.A. . . .	61·5				
Philippines . . .	59·8				

It is understood that certain new varieties of cane have been recently developed in Philippines which yield upto 89·15 tonnes per hectare.

3.14. **Utilisation of sugarcane.**—The Tariff Board had in its Report of 1950 for the period from 1937-38 to 1946-47, given the figures of 19 to 24 per cent inclusive of Khandsari for chewing and setts. Khandsari manufacture accounted for 5 to 6 per cent of the total cane produced which gives the figures roughly of 18 or 19 per cent for setts and chewing. For the period from 1952-53 to 1957-58, the Tariff Commission in its report of 1959 reckoned consumption for chewing and setts at 18 to 19 per cent of the total production. The Indian Sugar Manual (Kanpur) gave similar figures for the subsequent years upto 1961-62. However, the Sugar Enquiry Commission adopted the figure of about 12 per cent for the year 1959-60 to 1963-64. The Sugar Enquiry Commission's estimates of percentages appear to have been derived from the analysis based on the survey conducted by the Directorate of Marketing and Inspection which estimated that the use for planting and chewing was only about 12 per cent. *We understand that about* 10 *per cent of the produce is needed for planting alone. It is difficult therefore to accept the figure of* 12 *per cent as the total requirement for setts and miscellaneous uses.* Reliable data are, however, available for the quantity of cane crushed by sugar factories and also estimates of the total quantity of cane produced. We have therefore, undertaken the analysis of utilisation of cane in respect of the cane crushed by sugar factories as against cane utilised for other purposes. It is our belief *that the demand for sugarcane for consumption in the form of khandsari, chewing, setts and gur is generally less elastic than its demand for consumption as sugar.* In the last five years, 39 to 66 per cent of the cane produced was made available to the sugar factories in Maharashtra and Bihar, 28 to 41 per cent in Tamil Nadu, 21 to 31 per cent in Andhra Pradesh, 19 to 26 per cent in Uttar Pradesh, 11 to 29 per cent in Mysore, and only from 9 to 15 per cent in Punjab and Haryana taken together. The figures for the whole country have varied from 23 to 31 per cent. Figures relating to the cane used under these two heads for the whole country and also for the major cane growing States are given in Appendices 14 and 15. A summary for the first three Plan periods and for the two succeeding years is as follows :

TABLE 3·8

Utilisatoin of cane during Plan periods

	First Plan	Second Plan	Third Plan	1966-67	1967-68
Total cane produced ('000 tonnes) .	333709	454646	539345	92826	96884
Annual average	66742	90929	107869	92826	96884
Percentage variation with 1950-51 = 100	96	131	156	134	140
Utilised for sugar	74705	116991	144458	21595	22403
Annual average	14941	23398	28892	21595	22403
Percentage of total	22·4	25·7	26·8	23·3	23·1
Percentage variation with 1950-51 = 100	132	206	254	190	197
Utilised for other purposes . .	259004	337655	394887	71231	74481
Annual average	51801	67531	78977	71231	74481
Percentage	77·6	74·3	73·2	7·67	76·9
Percentage variation with 1950-51 = 100	90	116	136	123	129

3.15. Adopting 1950-51 as base the percentage in 1965-66 for cane produced went up to 173; that of gur, khandsari and other uses to 143; for sugar it soared to 323. *While the increase in utilisation for gur, khandsari, chewing and setts was only marginal registering an average rate of growth of* 2·8 *per cent over the period of* 15 *years from* 1950-51 *to* 1965-66, *that for cane used for sugar was* 14·8 *per cent for the same period. This leads to the conclusion that notwithstanding the so-called diversion of cane in lean years for making gur and khandsari, the rate of growth for the sugar industry has been substantial.* In the First Plan period as compared to the percentage figure of 96 for all cane produced, the corresponding figure for gur, khandsari and other uses was only 90 while the share of sugar went up to as much as 132. During the Second Plan the percentage figures of cane used for sugar rose to 206 against the overall production figure of 131 and of 116 for other uses. The Third Plan registered an even greater increase for sugar. While the percentage figure for all cane produced was 156 and that of other uses was 136, that of use for sugar rose to 254. There were set-backs in 1966-67 and 1967-68 but as against only about 25 per cent increase in gur, khandsari and sett and chewing the utilisation for sugar was almost double the quantity used in 1950-51. *With the rise in the production of cane, the share of the sugar industry has been proportionately larger than that of other uses to which cane is put.* The proportion of the sugarcane used for planting and chewing to that used for gur and khandsari is not likely to vary very much from year to year. Assuming that the requirement for planting and chewing is proportionately the same the utilisation for gur and khandsari has considerably gone down, since more than its proportionate share of the increase in production has gone to the sugar industry as the following figures would show :

TABLE 3·9

Utilisation of sugarcane

(Quantity in '000 tonnes)

Plan period	Average production of cane	Increase over previous production	Shared by sugar		% share of sugar industry in total cane	Shared by other uses		Overall share % of other uses in total cane
			Qty.	%		Qty.	%	
1st . .	66742	..	..	..	..	..	..	..
2nd .	90929	24187	8457	34·9	25·7	15730	65·1	74·3
3rd .	107869	16940	5494	32·4	26·8	11446	67·6	73·2

3.16. State-wise analysis of cane available to sugar factories out of the total quantity produced and the installed crushing capacity in each State based on the standard working days adopted in 1962 for the last five seasons from 1963-64 to 1967-68 is given in Appendix 16. A summary of the utilisation of capacity for each major sugar producing State is as follows :

TABLE 3·10

Percentage utilisation of cane crushing capacity by sugar factories

	1963-64	1964-65	1965-66	1966-67	1967-68
Sub-Tropical					
Uttar Pradesh . .	88·51	102·69	104·97	51·91	58·37
Punjab & Haryana .	52·71	76·72	123·27	62·31	62·18
Bihar	53·62	93·61	89·58	47·83	34·26
Others . . .	42·83	67·72	71·08	30·31	18·73
Tropical					
Maharashtra . .	85·00	101·83	124·37	93·68	86·27
Andhra Pradesh . .	81·82	110·41	104·52	53·94	64·65
Mysore . . .	74·73	118·70	96·11	52·23	57·69
Tamil Nadu . .	71·50	101·42	98·60	66·33	70·76
Others . . .	63·39	85·19	92·84	60·36	46·87
All-India . . .	76·99	99·76	104·36	59·66	60·06

3.17. **Maharashtra is the only State where capacity was well utilised in almost all the years.** Uttar Pradesh which accounts for two-fifths of the total cane production in the country did well in the first three years but declined to almost half its previous performance in the last two years. Of the main cane producing States, Bihar has been the worst off.

3.18. Before we consider measures required for ensuring a stable supply of cane for sugar manufacture in order to enable the factories to work at their full capacity, it would be worthwhile examining what additional quantities of cane both in absolute and relative terms were needed by these States in the poorest year 1966-67. These figures are as follows :

TABLE 3·11

Cane needed by factories in 1966-67 for full utilisation of installed capacity

(In '000 tonnes)

State	Cane produced	Cane needed for full utilisation of installed capacity	Percentage of Col. 3 to Col. 2	Cane used for purpose other than sugar production	Percentage of Col. 3 to Col. 5
1	2	3	4	5	6
Uttar Pradesh . .	39370	6871	17·5	31952	21·5
Punjab & Haryana . .	9460	575	6·1	8509	6·8
Bihar	4398	2368	53·7	2227	106·3
Maharashtra . . .	9977	376	3·8	4410	8·5
Andhra Pradesh . .	8033	1417	17·6	6373	22·2
Mysore	6931	726	10·5	6137	11·8
Tamil Nadu . . .	6897	978	14·2	4970	19·7
Other States . .	7760	1282	16·5	6653	19·6
All-India . . .	92826	14593	15·7	71231	20·5

The shortage in Maharashtra was the least. Punjab and Haryana needed only a small increase in their supply of cane to enable sugar factories to reach optimum production. Excepting Bihar the rest of the States needed sizeable increases for meeting the requirements of the sugar industry. The economy of Bihar appears to be fundamentally unbalanced from the point of sugar production. Special steps need therefore, to be taken to improve both area and yield. ***Unless a better balance could be rapidly restored between the demand for and*** *the supply of sugarcane to the majority of sugar factories in this State, their economic viability is likely to steadily worsen. We are bringing this to the notice of the authorities concerned for remedial action.*

3.19. The availability of cane to sugar factories is conditioned by the size of the crop and the prices of gur and khandsari. In seasons of low production better prices are offered for cane by gur manufacturers. At 10 per cent recovery the incidence of excise duty is Rs. 4·60 per quintal in terms of cane, and the cane purchase tax amounts to about Re. 0·50 in most States. Together the two levies come to Rs. 5·10 per quintal of cane. *Even if other factors such as the high prices of gur which have sometimes gone above the controlled price of sugar, the greater recovery of gur owing to lack of elimination of molasses, impurities and mud, the absence of statutory control on gur prices and lesser cost of conversion, are ignored, the gur manufacturer has still an edge of about Rs.* 5·00 *per quintal of cane or about* 66 *per cent of the minimum prices fixed for sugarcane purchased by factories.*

3.20. While the overall utilisation of capacity by the sugar factories in 1965-66 was as high as 104·36 per cent, it fell sharply in the year 1966-67 to 59·66 per cent for reasons discussed earlier. It has already been stated that the availability of sugarcane to factories is subject to wide periodical fluctuations in supply not because there was not enough cane produced in the country but because of its so-called diversion for gur and khandsari. In 1966-67 sugar factories got only 23·26 per cent of the total cane produced while the rest went for the production of gur, khandsari and other minor uses. On the other hand, in the previous year of plenty, sugar factories received 30·63 per cent of the cane produced and the cane used for gur and khandsari and other minor uses accounted for only 69·37 per cent of the total production. Simultaneously even though percentage for cane utilised for sugar with base 1950-51 as 100, declined from 323 in 1965-66 to 190 in 1966-67, it fell by only 20 points in the case of other remaining uses, i.e., from 143 to 123. *This shows unmistakably that there is a certain basic demand for gur, khandsari and other uses which has to be satisfied* and the surplus alone is made available to sugar manufacturers. In 1959 the Tariff Commission was informed that diversion of cane for gur manufacture at the cost of sugar began to take place when the price of gur exceeded Rs. 37·51 per quintal in Uttar Pradesh and Rs. 40·16 per quintal in Bihar and Punjab. It is now estimated that as long as the price of gur is about one-third that of sugar or less the tendency to sell cane for gur manufacture at the cost of sugar production is arrested but when the prices go above this level the supply which may otherwise have gone to sugar factories tends to get diverted for gur making. A number of measures have in the past been advocated for making larger quantities of cane available to sugar factories. It has, for instance, been suggested that more compact areas be reserved for sugar factories; khandsari units and power crushers be excluded from reserved areas or arrangements made for adequate cane supply to both; all existing khandsari units be licensed and new units be banned in reserved areas or within the range of 15 to 20 kilometres of the sugar factories; khandsari and power crusher units be shifted from Intensive Development Blocks; duty or levy be imposed on khandsari and power crushers and if possible on kolhus in order to restrict their ability to pay higher price; regulation of supplies of cane on an equitable basis, through co-operatives, to sugar factories, as also to khandsari units and power crushers; buffer stock of sugar be maintained to ensure that gur prices do not shoot up, warehousing facilities be developed for storage of gur; sugar factories may not be permitted to manufacture gur; intensive programme of cane development be taken up through improvement in irrigation and drainage facilities. Producers' Association and some State Governments have with the same object in view advocated removal of tax disparity between gur and khandsari on the one hand and sugar on the other. They have also suggested regulatory control and restriction of gur and khandsari manufacture in reserved areas, compulsion on growers to supply a portion of their produce to sugar factories, higher and more attractive cane prices, demarcation of areas for gur, khandsari and sugar separately, quality control on gur to discourage its sub-standard production, fixation of more attractive prices for cane in order to reduce the advantage available to gur manufacturers in the form of freedom from Government levies and cesses, decontrol of the price of sugar coupled with the fixation of minimum price of cane. It has also been advocated that additional cane prices may be given when the availability of cane to sugar factories declines and that rebate in excise duty be allowed to factories in areas which are subjected to intensive and large scale gur and khandsari competition.

3.21. It is said that the sucrose content in gur is between 56 per cent and 59 per cent and it contains 8 per cent to 20 per cent of inverted sugars while sugar contains 99 per cent to 100 per cent of glucose which makes the manufacture of gur wasteful in comparison to sugar. Certain by-products such as molasses and impurities contained in pressmud are also not recovered from gur manufacture. *It is, therefore, pointed out that for securing the maximum caloric value from sugarcane gur is not as efficient a source as sugar and therefore cane should be made available for sugar production by reducing supplies for production of gur.*

3.22. All these arguments are based on the impression that irrespective of the size of the cane crop and wide fluctuations in it, measures of control on sugar and freedom from restrictions enjoyed by gur and khandsari, combine to reduce the supply of cane for sugar manufacture. Somehow khandsari and power crusher units have been singled out as the most suitable target for such restraints. It needs to be stated *that khandsari uses hardly between 5 and 6 per cent of the total cane production which is equivalent to only about one fifth of the cane used by sugar factories. It needs to be recognised in this context that even if by adoption of stringent measures calculated to discourage khandsari manufacture utilisation of sugarcane by it is reduced to half and the surplus thus available is wholly diverted to sugar factories, the relief thus afforded to the latter would be only marginal in character.* The total production of khandsari as reported by the Central Excise

Department was 104,429 tonnes in 1967-68 which worked out to only 4·7 per cent of the production of sugar in the same year. As against the excise levy of about Rs. 4·60 per quintal on sugar the duty on khandsari is about Rs. 1·25 per quintal. *It would appear, therefore, that Khandsari manufacture offers hardly any real threat to the growth and development of sugar industry. On the other hand there is some room for sympathy for this small scale industry which serves to supplement the availability of white sugar and at times operates to keep sugar prices in check.*

3.23. It has been suggested that kolhus for manufacture of gur and khandsari may also be brought under licence and excise duty levied on gur and purchase tax charged from the gur manufacturers on the purchase of cane. On a conservative estimate the number of kolhus in Uttar Pradesh alone is 3·69 lakhs and in our view it would administratively be impossible to enforce any such regulation even if it were desirable to do so. In Uttar Pradesh which accounts for only a little less than half the total cane production in India, the entire marketing of cane is done through Cane Marketing Co-operatives which enter into bonds with the sugar factories for the supply of cane from their members. Simultaneously areas are also reserved separately for each sugar factory and cane growers within the reserved area cannot make supplies to any other factory. They have however, the choice to vary the bonded quantities. About 70 per cent of the total cane acreage in the State falls within the factory zones, and even if half of the produce was made regularly available to sugar factories there would be no shortage. We have been informed that if the Cane Marketing Co-operative Societies do not care to supply the quantity bonded, the sugar factories are unable to take any action to enforce the agreement. On the other hand when cane prices are low and gur making is not remunerative the sugar factories have to accept and crush all the cane offered necessitating working far beyond the season involving loss of recovery and increase in cost. *If, therefore, it is not practicable to deliver adequate supplies of sugarcane even to sugar factories through the agency of Cane Marketing Co-operative Societies any attempt to regulate supplies of cane to gur and khandsari manufacturers through such machinery seems an impracticable proposition.*

3.24. As we have already pointed out the shortage of supply of cane to sugar factories is most felt only in years when the area and production are significantly low. The recurrence of this situation every few years has given rise to the impression that it is a chronic malady inherent in the demands made on the available supplies of cane by competing industries manufacturing different sweetening agents. In seeking to remedy this by evolving measures for encouraging the flow of cane from gur and khandsari to sugar, it does not appear to have been adequately appreciated that in years of shortage all the sectors are faced with similar problems though not to the same degree. If by the implemetation of various measures that have been advocated, more cane could be made available for sugar manufacture in a period of overall shortage, it could only be at the cost of gur, khandsari and other minor uses including setts. There is a certain basic relationship between the growth ratios of gur and khandsari and that of sugar and it does not seem advisable to drastically disturb it. *The solution to the problem of full utilisation of capacities by the sugar industry lies mainly in the direction of securing area and price stability for sugarcane, which when accomplished, could prevent these wide year to year* fluctuations. The fall in area and consequently in production, often occurs as a result of excessive production in previous seasons and the consequences arising therefrom. *The need, therefore, is as much to control excessive production as under-production of sugarcane both of which lead to market disruption and causes serious disequilibrium to develop in the established supply pattern of cane.*

3.25. The basic requirement for survival of any organised industry is the regular supply of the raw material which it needs at the right time and to the extent of maintaining the utilisation of its capacity to the optimum level. This is true for the sugar to a greater extent than for most other industries. *While other industries can stockpile their requirements of raw material in anticipation of periods of low availability and can also otherwise stagger or plan their inventories of raw material, the sugar industry suffers from the limitation that its raw material is perishable,* must be used as fresh as possible, at as near the site of production as is practicable and within a limited duration. *The need, therefore, to plan, nurse and develop the source of raw material becomes all the greater for this particular Industry. For efficient survival, the sugar industry has, therefore, to closely involve itself with the production of cane so as not to be dependent upon independent unrelated effort for the production and availability of its principal raw material.* It appears to us, however, that generally speaking this essential pre-requisite has seldom received this amount of attention that it really deserved. The cultivation of cane was mostly left to fortuitous circumstances depending upon the agro-economy of the particular region and intensive organised efforts appear to have been seldom made by manufacturing managements to develop compact areas around sugar factories for providing on long term basis a stable source of supply. It is true that in certain areas and to varying extent some efforts have been and are being made. But judged by results these have rarely proved adequate. The fact remains that, in *certain areas, cane has to be brought from distances as long as* 100 *kilometers only because the area around the factory was not developed for the production of cane or having been so developed have been allotted to other factories since licensed in their vicinity. This leads to loss, driage and pilferage, increase in cost of transport and reduction in the efficiency of sugar production or viability of the factory.*

3.26. **The ideal solution to the problem would be, to provide for an area of about 60 sq. kilometers per 1000 tonnes of crushing capacity around each factory which the factory should scrupulously nurse and develop.** Since cane needs inter-cropping, an area of about 20 to 30 sq. kilometers, would be expected to be under cane every season with the remaining under other crops. *Where sugar units are situated too close to each other, these may be dispersed in such a manner that there is no overlapping of the resereved area.* With substantial increase in irrigation and attention to better varieties for sowing, yields are likely to increase and would provide enough additional production that may enable sugar factories to enlarge their capacity to meet the greater demand of sugar in part at least by way of replacement of gur. *We hope that concerted attempts would now be made in this direction* *even though such measures which involve long term planning might take some time to bring about perceptible results.*

3.27. (1) Today the sowing of particular crops depends almost wholly on the discretion of the farmer who is affected more or less by the prevailing prospects of the return that a crop may provide. Since shortage occurs mainly due to the disinclination of the farmer to repeat sowings of cane in preference to other crops because of previous over-production and consequent fall in prices the first step necessary is to ensure that any needless optimism on the score of prices does not lead to greater cultivation of cane than the agro-economy of the twin industries of gur and sugar permits. *With the help of the agricultural and Cane Development Department of States and of Cane Development societies, estimates should be framed in advance of the optimum requirement of sugar factories as well as for gur and khandsari units and for other incidental uses keeping in view the rate of growth of capacity in the sugar factories (which can easily be but is seldom in practice accurately determined) as also of gur and khandsari.* Those estimates may be related to the average yield of the region and the area required may be determined. *The next step should be to distribute this area over the various territorial, administrative or development sub-divisions and to provide assistance only to the extent of the area so determined and discourage over-production.*

(2) *Maximisation of irrigation facilities for cane growing areas should be tried,* and as far as possible in the areas within a radius of about 5 to 6 kilometers of the sugar factory so that if total irrigation is available in this area, it may be of help—in the future Plan on compacting cane area—in the immediate command of the sugar factory.

(3) If, in any year over-production of cane occurs it can be anticipated well in advance from crop forecasts. *The price mechanism* in such a year *should be so adjusted that while not being unremunerative to the grower, sugar factories may not be forced to crush beyond the limit of economic capacity and the excess being converted and stored as gur and/or khandsari.*

(4) *In years of shortage the size of the crop may be worked out well in advance and a price provided which would ensure adequate supply to sugar factories.* Any hesitation with regard to the price of sugar as a result of such measures should not stand in the way of sugar factories running to full capacity. The tendency for excessive diversion of cane towards gur is not then likely to occur since it is the shortage of sugar which results in raising to high levels the price of gur.

(5) *The cane crop occupies only* 1·79 *per cent of the total cropped area in the country and any marginal increase in this area which may be conducive to the satisfaction of the demand for sugarcane* should not cause alarm and no overt measure need be taken to bring about a drastic reduction in the area.

(6) *Cane development programmes should be vigorously pursued in all the States to ensure high yields and freedom from disease.* If for any reason it is not possible to develop any particular area within the command of a sugar factory for the production of cane in quantities adequate for

utilisation of the full capacity of the factory *there ought to be no hesitation in shifting such a factory to another area which would assure the requisite supply.*

(7) *Density of sugar factories in relation to the areas needed by them should be determined and dispersal effected keeping in view the growth and full utilisation of capacity installed* as well as utilisation of the cane produced.

(8) *It must however be stated that Bihar appears to have special problems which need very careful and thorough investigation.* If these problems are not looked into and solved the sugar industry in this State cannot continue to be economically viable. *It may even be necessary to increase the present proportion under cane from 1·8 per cent to about 2·5 per cent of the total cropped area to ensure better supplies.*

3·28. **Sugarcane Prices.**—The minimum price for sugarcane was fixed by Government of India in 1951 under the Sugar and Gur Control Order, 1950. This Order was replaced in 1955, by the Sugarcane Control Order. Sugarcane prices have since then been fixed from time to time keeping in view the cost of production of the return to the growers, the general trend of prices of other agricultural commodities and the fair prices of sugar for the consumer. The initial price fixed worked out to Rs. 4·34 per quintal at factory rate. In 1962 Government adopted a system of minimum price fixation related to the recovery of sugar from sugarcane. This system has been in operation since and it guarantees a specific minimum price upto a certain level of recovery and provides for a premimum of each 0·1 increase in recovery percentage about this level. In 1966-67, the minimum price of sugarcane was fixed at Rs. 5·36 per quintal linked to the recovery of 10·4 per cent. This price was revised to Rs. 5·68 for the recovery of 9·4 per cent on 27-12-1966. The minimum price now in operation is Rs. 7·37 per quintal. Owing, however, to the shortage of sugarcane in 1966-67 and 1967-68, most of the sugar factories had to pay much more than the minimum and there was hardly any State or region where the minimum prices may have been adequate to make purchase of cane. In Uttar Pradesh prices ranging upto Rs. 17/- were paid, in Panjab and Haryana upto Rs. 15·37, in West Bengal Rs. 16/-, in Orissa, Madhya Pradesh, Rajasthan and Mysore upto Rs. 15/- and in Maharashtra upto Rs. 16/-. In Tamil Nadu the range varied between Rs. 8·50 and Rs. 10/-. Even in the current season when the sugarcane supply is plentiful, the prices in Uttar Pradesh and many other parts of the country were around Rs. 10/- per quintal despite the fact that the minimum price fixed by Government continued to be Rs. 7·37.

3·29. **Purchase tax on sugarcane.**—Almost every State Government levies a purchase tax on cane the effective rate of which per quintal is 51 paise in Uttar Pradesh and Bihar, 50 paise in Maharashtra, Andhra Pradesh and Tamil Nadu. There is a purchase tax of 32 paise in Madhya Pradesh and Punjab levies it at 24 paise per quintal. Mysore and Gujarat have *ad valorem* purchase tax of 10 per cent each and it is 5 per cent in Kerala. This levy which was originally called cess, was meant for the development of cane. In Uttar Pradesh the cess was levied on the quantity of cane crushed whereas the Purchase Tax is levied on cane purchased which comes almost to the same thing. The Uttar Pradesh Sugarcane Act does not, however, stipulate that the entire collection would go for the development of sugarcane, nor does those of other States. *Considering that the utilisation of cane for sugar manufacture in an average year would be about thirty million tonnes, the realisation from purchase tax alone would amount to about Rs.* 15 *crores which would go a long way towards the development of the Industry if applied in a planned manner for the purpose of development of sugarcane.*

The National Federation of Co-operative Sugar Factories have pointed out that the variation of incidence of purchase tax in the cost of sugar is very wide and differs from State to State. They have *desired a uniform rate of purchase tax in all the States. Alternatively* they have suggested a *special additional excise at uniform rate in lieu of purches tax on sugarcane,* as is done in the case of sales tax on sugar, and that the revenue derived therefrom may be passed on to the States concerned by the Centre.

CHAPTER 4

PRODUCTION, CONSUMPTION, FUTURE DEMAND AND EXPORTS

4.1. **Production.**—Sugar being an agro-based industry its fortunes are liable to vary with fluctuations in the size of the sugarcane crop. The cyclical fluctuations in the volume of sugarcane production depend mainly on the monsoon and other natural factors and partly on prices of cane. Sugarcane, the basic raw material, forms about 70/75 per cent of the total cost of production of sugar and as such, the progress of the Industry and the extent of production largely depend upon the adequacy of the crop and the sucrose content of cane.

4.2. **Available statistics show that production of sugar has generally shown an upward trend over the last decade and a half, though there have been wide fluctuations and seasonal ups and downs.**—Whilst the production increased from 18.9 lakh tonnes in 1955-56 to 35.5 lakh tonnes in 1965-66, there was a sharp decline in 1966-67 when it dropped to 21.5 lakh tonnes due mainly to serve drought conditions which also affected other agricultural crops. In 1967-68 production at 22.2 lakh tonnes was only a little higher than that in the preceding year, as adverse weather conditions continued for part of the season. *Production of sugar recorded an increase of about* 213 *per sent between the period* 1950-51 *to* 1965-66 *and even in the worst year*, i.e., 1966-67, *production was higher by about* 100 *per cent* as can be seen from the following statistics :

TABLE 4.1

Production of Sugar

Annual Average	Production in lakh tonnes
1950-51	11
1st Plan	15
2nd Plan	23
3rd Plan	29
1966-67	22
1967-68	22

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4.3. In 1968-69 primarily on account of a good cane crop as well as the operation of certain other favourable factors production has reached or even exceeded the record figure of over. 35.5 lakhs tonnes which was obtained in 1965-66. *Judging from these tendencies the prospests of sugar production in the year* 1969-70 *are encouraging, though having regard to the nature of cyclieal fluctuations in the past, the succeeding two years may however, not be as good.* Appendix 17 indicates figures of sugar production from 1950-51 to 1967-68.

4.4. Though Uttar Pradesh continued to be the single largest sugar producing State, its predominance has gradually declined with the rapid development of the Industry in the tropical belts, especially in Maharashtra. *It is seen that while U. P.'s share in the production went down from 47 per cent in 1960-61 to 36 per cent in 1967-68, that of Maharashtra rose during this period from 18 per cent to 28 per cent.* In absolute terms production in U. P. fell from 14.3 lakh tonnes to 8.1 lakh tonnes, whilst in Maharashtra production rose from 5.3 lakh tonnes to 6.2 lakh tonnes over this period, the all India production being 30.3 lakh tonnes and 22·2 lakh tonnes in 1960-61 and 1967-68 respectively. *Moreover, during the same period whilst almost all the States of the sub-tropical belt showed a decline in production, most of the States in the tropical belt registered gains.* Figures of State-wise production of sugar from 1960-61 to 1967-68 are given in Appendix 17A.

4.5. **Quality.**—*The quality of Indian sugar in terms of grain size and colour has shown continuous and marked improvement.* In 1935-36 when standard grading was introduced, a substantial proportion of production was in grade 24 and below. *Almost all of the present day sugar is of grade 29 and 30. Whilst the most common grain grade in 1935-36 was E., it is C and D today.* It has been acknowledged that D grade sugar is quite comparable to foreign sugar.

4.6. According to the Indian Standard Specifications, there are at present 20 grades of sugar based on grain size and colour. The colour series have four grades designated as 30, 29, 28 and 27 and grain size series have five grades, namely, A, B, C, D and E. The bulk of the sugar production at present is of C, D and E grain sizes and 30 colour specification. *There has been over the years, a noticeable shift not only towards higher colour specifications but also for bolder grains.* A table showing the percentage of different grades of sugar produced during the three years 1965-66 to 1967-68 is in Appendix 17 B.

4.7. There would seem to be a great need for uniformity in the grade and quality of sugar. Though the major part of the production is confined to C, D and E 30, a number of factories produce varieties of grades of different qualities, specially of bolder grain because of higher profits available. We understand that the production of bolder grains affects the capacity of the boiling house. *Switching over from bolder grain to smaller grain is likely to increase the pan floor capacity by about 30 per cent, of crystalisers by 25 per cent and the centrifugal capacity by 11 per cent.* In an average annual sugar production of 30 lakh tonnes large grain would constitute roughly 4.5 lakh tonnes. If the latter is diverted to smaller grain variety, about 0.5 lakh tonnes more sugar would be available which it is estimated would appreciably bring down the cost of production. *Substitution of bold grain by smaller grain sugar would also result in reduced consumption of steam and savings on this account would result in further reduction in the cost of production.* Smaller grain sugar being more easily soluble would also reduce wastage. *There is, therefore, a case for encouraging the production of the smaller rather than of the bolder grains .*

4.8. **Consumption.**—*Consumption of sugar depends upon not only the supply position based on production and stock but also on the availability of other sweetening substitutes namely, gur and khandsari, their prices, growth of population and changes in the level of income and in the standard of living among different sections of people.* With control on price and distribution of sugar, the internal consumption of sugar however, depends more on the actual releases by the Government from the total production and available stock.

4.9. Statistics reveal that with the increase in population and per capita income in India, the total consumption of sugar went up from 21 lakh tonnes in 1958-59 to 28 lakh tonnes in 1965-66. However, during 1966-67 the consumption declined to 27 lakh tonnes owing to the severe fall in sugar production. Figures indicating trends in consumption of sugar from 1950-51 to 1967-68 are given in Appendix 18.

4.10. The All-India per capita annual sugar consumption increased from 5·0 kgs. in 1963-64 to 5·7 kgs. in 1965-66. There was, however, a slight decrease in 1966-67 to 5·2 kgs. and a further fall to 4·3 kgs. in 1967-68 owing to shortage of production and supply. Trends in total consumption and per capita consumption of sugar are summarised below.

TABLE 4·2

Consumption of sugar

Annual Average	Total consumption	Per capita consumption
	Lakh tonnes	Kg. per annum
1950-51	11	3·0
1st Plan	17	4·4
2nd Plan	21	4·9
3rd Plan	25	5·4
1966-67	27	5·2
1967-68	21	4·3

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In 1968-69, the per capita availability of sugar is likely to increase even allowing for increase of population and building of stocks.

4.11. It is pertinent to note that the per capita consumption of sugar in 1966-67 has been highest in Delhi (24·1 kgs.) followed by Pondicherry (11·0 kgs.), Gujarat (10·5 kgs.) and Maharashtra (9·0 kgs.) as against the All-India average of 5·2 kgs. The other States which showed higher per capita consumption than the All-India average were Himachal Pradesh, Punjab and Haryana, West Bengal and Assam. Manipur with a per capita consmption of 2·1 kgs. was the lowest in the ladder. Appendix 19 indicates the per capita consumption of sugar in

India from 1949-50 to 1967-68 and the per capita State-wise consumption of sugar from 1963-64 to 1967-68 is given in Appendix 20.

4.12. **Compared to foreign countries the per capita annual sugar consumption in India has been the lowest.**—In 1967 when the world average per capita consumption of white sugar was 18·9 kgs. that for India was only 5·0 kgs. The highest per capita consumption was that of Cuba (78·3 kgs.) followed by Hawaii, Australia, U. K., Canada, U.S.A., U.S.S.R. which had per capita consumption ranging from 40 to 78 kgs. per annum. Appendix 21 indicates the per capita annual consumption of sugar in selected countries in 1967.

4.13. **Future demand.**—As stated earlier, the demand for sugar depends upon various factors such as growth in population, change in dietic habits, rise in living standard, quantum of export, availability and price of sugar and of other sweetening agents, *i.e.*, gur and khandsari. The Development Council for Sugar Industry has estimated the domestic demand for sugar for the next three years at 32 lakhs tonnes, 34 lakh tonnes and 36 lakh tonnes in 1968-69, 1969-70 and 1970-71 respectively. This gives an annual increase at the rate of 2 lakh tonnes. The Council has further estimated 5 lakh tonnes for exports. The Sen Commission had placed the requirements of sugar for domestic consumption by 1970-71 and 1975-76 at 37·6 lakh tonnes and 53·4 lakh tonnes respectively. It had further estimated that exports of sugar would be around 7·5 lakh tonnes and 10 lakh tonnes in 1970-71 and 1975-76 respectively. Most of the sugar mills and their associations, who have replied to our questionnaire, are of the view that by and large the estimates of the Development Council and the Sen Commission are more likely to be achieved. However, the Indian Sugar Mills' Association has opined that the estimate of annual increase of 2 lakh tonnes suggested by the Development Council would seem to be excessive and that the rate of annual increase of one lakh tonnes provided for and achieved in the Third Plan period may be adhered to till the end of 1970-71 in view of the recessionary trends in the country which, according to the Association, do not seem to have been taken into account by the Development Council and the Sen Commission. On the above basis, the Association has estimated the demand for internal consumption of sugar at 35 lakh tonnnes and export at 5 lakh tonnes, thus bringing the overall requirements to 40 lakh tonnes by 1970-71. The Planning Commission has placed the domestic requirements of sugar at 42 lakh tonnes by 1973-74, exclusive of exports of 5 lakh tonnes.

4.14. Since 1958 there has been control on sugar excepting for the period from September 1961 to 16th April, 1963. Hence the figures of consumption of sugar in the past decade relate mainly to a controlled economy. Statistics show that the consumption of sugar was of the order of 28·5 lakh tonnes in 1965-66 as against the estimate of 30 lakh tonnes at the end the Third Five Year Plan. It would be reasonable to assume that if Government had been in a position to release more sugar for internal consumption the targetted figure of 30 lakh tonnes could have been reached by the end of the Third Five Year Plan. Had 30 lakh tonnes been released for consumption in 1965-66 the per capita consumption could have risen to 6·1 kgs.

4.15. For estimating the possible rate of future growth in sugar consumption we have adopted the 15 year period 1950-51 to 1965-66 which includes years of both shortages and surpluses. The years 1966-67 and 1967-68 are excluded because of abnormally low production due to drought conditions. During this span of 15 years, the per capita consumption of sugar increased by 2·7 kg. from 3·0 kg. in 1950-51 to 5·7 kg. in 1965-66, the latter level having also been reached earlier in 1961-62. Assuming a future minimum increase of the same order, the per capita consumption at the end of 1973-74 would be higher by 1·35 kg., or 1·3 kg. to be on the safe side. Adding 1·3 kg. to the base figure of 5·7 kg. attained in 1965-66, the per capita consumption by 1973-74 can be estimated at 7 kg. Taking the population in 1973-74 at 601·7 million the total demand for sugar can be estimated at 42·12 lakh tonnes or 42 lakh tonnes in round figures. *Assuming that exports would be also 5 lakh tonnes by 1973-74, the total requirement of sugar would thus be 47 lakh tonnes which is also the latest estimate of the Planning Commission.* It may be mentioned that domestic demand estimate is based on relatively easy availability of sugar. There is every possibility that internal demand may even be higher due to the rise in the standard of living of the people particularly in rural areas where income generation is likely to be faster owing to agricultural developments. Further the demand for sugar may also be influenced by the shift from gur in favour of sugar, depending on an appropriate price parity expected to be maintained between the two sweetening agents.

4.16 **Exports.**—With the development of the sugar industry in the last two decades India has changed from the position of a net importer of sugar in pre-war years to a net exporter of this sweetening agent. Exports of sugar on an organised basis commenced in 1957. In that year when the International market price of sugar was higher than that of Indian sugar, mainly because of the closure of the Suez Canal, the Industry was able to export at a profit. The total exports in 1957 averaged to 1·5 lakh tonnes valued at Rs. 12 crores. At the end of 1957, the International prices of sugar fell and it became difficult for the Industry to undertake exports without incurring losses. With a view to earn foreign exchange, Government decided to subsidise sugar exports by promulgating in June, 1958, the Sugar Export Ordinance which was replaced in September, 1958 by the Sugar Export Promotion Act under which the Indian Sugar Mills' Association was appointed as the export agency.

4.17. Exports of sugar gained momentum from 1961-62 after the Cuban crisis and India was, for the first time, able to enter the markets of U. S. A., Canada, U. K. and Japan. The bulk of the sugar exports at present are to U.S.A., Canada and U. K. because of the preferential statutory quotas secured under agreements with these countries. During 1969 Government have decided to export 25,400 and 70,000 tonnes of sugar under the India-U.K. negotiated price quota and the U.S.A. quota agreement respectively. India also exports sugar to France, Singapore, Vietnam, Lebanon, Zambia and Iraq. Detailed destination-wise exports of sugar are shown in Appendix 22.

4.18. The Monthly Statistics of Foreign Trade of India published by the Director General of Commercial Intelligence and Statistics did not record variety-wise exports of sugar till 1961-62. According to ISMA's Export Agency, the bulk of sugar exported till 1962 comprised white sugar. With effect from 1962-63 unrefined sugar was separately classified in the Monthly Statistics of Foreign Trade of India. For the first time in 1965-66 export of centrifugal sugar and refined sugar was separately recorded. It is understood from ISMA's Export Agency that after 1962-63 export of raw sugar significantly increased and wholly replaced white sugar owing to changes in the international demand. Taking centrifugal and unrefined as raw sugar, its share in the total sugar export increased from about 50 per cent in 1963-64 to nearly 100 per cent in the subsequent years. Variety-wise break-up of the sugar exports since 1957 is given in Appendix 23.

4.19. **Export losses.**—During the period commencing from 1958 and upto the middle of 1961 the losses on exports were borne entirely by the sugar industry under the provisions of the Sugar Export Promotion Act of 1958, as there was some cushion in the ex-factory control price then fixed for internal consumption. From the latter half of 1961 the quantum of exports increased considerably and Government devised a scheme, which was modified from time to time, for subsidising the losses on sugar exports. In effect the Industry's contribution was more or less limited to the estimated profit margin it had to forego. Upto the end of 1962 Government used to fix a floor price for sugar and losses on exports were shared between Government and the Industry. In 1963 it was decided that each factory should supply sugar for export at a no-profit-no-loss basis. Later on, between 1964 and 1967, this policy was revised and Government purchased sugar for export on "tender" basis from individual factories by keeping the export of sugar outside the purview of the Sugar Export Promotion Act. Under this scheme the difference between the purchase price less expenses on the one hand and foreign realisation on the other was met by the Government, the Association being paid the actual handling charges. With the introduction of partial decontrol in November, 1967 Government decided to export sugar once again under the Sugar Export Promotion Act and to export only against India's U. K. Negotiated Price Quota and U. S. Quota which gave preferential prices. In 1968 exports to these two countries totalled 98,728 tonnes consisting of 25,400 tonnes to U. K. and 73,328 tonnes to U. S.A. The total quantity exported was apportioned amongst the individual factories having regard to their production in the previous season. The Sugar Export Promotion Act also provides that for deliveries made by individual factories against their export quota, they would be paid on the basis of realisation from the foreign market less expenses incurred. The export quotas which are to come out of the levy were to be supplied at fixed prices.

4.20. It has been reported that the accounts relating to export losses for 1968-69 under the Sugar Export Promotion Act have not been finalised. However, taking into account the net export realisation (the average of f.o.b. realisation being Rs. 1012 per tonne) during 1968 as well as other miscellaneous receipts and allowing for freight and other expenses, a payment of Rs. 102·20 per quintal had been made to the sugar factories. On finalisation a marginal adjustment would be made in the above payment. Figures of export losses per quintal incurred by the factories in various zones on the basis of export/levy price excluding excise duty and on account of payments made to the sugar factories show loss in different zones varying from Rs. 8·2 per quintal in Zone I to that between Rs. 23 and Rs. 25·3 per quintal in Zones II to V. The average estimated f.o.b. realisations on our exports to various countries from 1965 to 1968 are shown in Appendix 24.

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CHAPTER 5

GUR AND KHANDSARI

5.1. **Production of Gur and Khandsari.**—Gur, also known as jaggery, continues to be manufactured in almost all the sugarcane producing States. In the sub-tropical belt its manufacture is mainly in the States of Uttar Pradesh, Punjab, Haryana and West Bengal. In the tropical belt, gur is produced mostly in the States of Andhra Pradesh, Mysore, Tamil Nadu and Maharashtra. Khandsari industry is, however, concentrated in a few districts of Uttar Pradesh. Some khandsari sugar is also produced in the States of Punjab, Maharashtra and Andhra Pradesh. Appendix 25 indicates the percentage shares of major States in the estimated production of gur including khandsari and sugar in India.

5.2. **The present estimated annual production of gur and khandsari is around 65 to 70 lakh tonnes.**—Within the last 15 years, simultaneously with an almost three fold rise in the sugar output, production of gur and khandsari has also almost doubled from about 34 lakh tonnes in 1950-51. It had been pointed out in paragraph 33 of our Report (1950) that the estimates of gur production are obtained by a deductive method and cannot, therefore, be treated as being completely accurate. However, since the same method has been followed in computing these figures for many years now, any inferences drawn from them for a comparative study is likely to be more reliable. The table below shows the gur production from 1950-51 to 1966-67. Production of khandsari being of the order of only 1 to 3 lakh tonnes annually are merged with the production statistics of gur.

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TABLE 5.1

Estimated production of gur and khandsari

(Figures in lakh tonne

Year	
1950-51	34·29
1955-56	30·99
1956-57	51·00
1957-58	53·00
1958-59	55·30
1959-60	54·30
1960-61	65·30
1961-62	62·70
1962-63	61·509
1963-64	65·80
1964-65	72·00
1965-66	69·11
1966-67	60·87 (Provisional).

Source : Development Programme for Sugar Industry for IV Plan

5.3. **Utilisation of cane for sugar, gur and khandsari.**—It will be noticed from a study of the figures of cane utilisation that the expectation that in course of time the sugar industry will progressively attract to itself a larger proportion of sugarcane crop at the expense of the gur industry expressed in para 11·4 of our Report of 1959 has only partially materialised.

Table below shows the changes which have taken place between 1950-51 and 1967-68.

TABLE 5·2

Utilisation of cane for sweetening agents and other uses

	Figures in million tonnes						Percentage increase	
	1950-51	Annual Averages			1966-67	1967-68	1967-68 over 1950-51	Annual Average
		1st Plan	2nd Plan	3rd Plan				
Cane production . .	69	67	91	108	93	97	40·6	2·4
Availability of cane for sweetening agents . . .	60	59	80	95	82	85	41·7	2·4
Utilisation by sugar factories .	11	15	23	29	22	22	100·0	5·9
Utilisation by gur and khandsari manufacturers . .	49	44	57	66	60	63	28·6	1·7
Other uses	9	8	11	13	11	12	33·3	1·9

NOTE.— 1. Though it is difficult to accept the figures of 12 percent for use as setts and chewing for reasons given already in paragraph 3·14 of Chapter on sugarcane. We have for the sake of uniformity adopted it in these calculations for the period from 1956-57 todate and at 12·5 per cent for the previous period.

2. Figures of utilisation of cane for gur and khandsari has been estimated after deducting from total sugarcane figures for other uses and for sugar manufacture.

Source.— Directorate of Economics and Statistics for cane production utilisation of cane for manufacture of sugar and other uses].

would be observed therefrom that while, in absolute terms the quantity of cane utilised for conversion by sugar factories having risen from 11 million tonnes in 1950-51 to an annual average of 29 million tonnes in the Third Plan period, had fallen sharply to 22 million tonnes during the next two years, *viz.*, 1966-67 and 1967-68. *In relative terms also it will be noticed that while over the period taken as a whole, the annual average increase recorded in the production of sugarcane was* 2.4 *per cent, the annual increase in the utilisation for the manufacture of sugar was* 5·9 *per cent and for the manufacture of gur and khandsari was only* 1·7 *per cent. It does appear, therefore, that there has been over these years, a noticeable shift towards a more extensive* *utilisation of cane for sugar manufacture but the fact still remains that gur and khandsari even now account for the bulk of cane consumption.*

5.4. **The so-called diversion of cane from sugar to gur.**—In recent years sugarcane crushed by the sugar factories had increased to 31 per cent in 1965-66 from 22 per cent in 1962-63, whereas the percentage utilised for gur and khandsari progressively fell from 66 per cent to 57 per cent during this period despite the fact that cane production increased by 27 per cent. The whole of this increase was not apparently utilised by the sugar factories. Similar trends were noticeable in 1962-63 and 1965-66. In the total increase of cane availability amounting to 22 million tonnes from 83 million tonnes to 105 million tonnes, sugar factories utilised only 11 million tonnes, *i.e.*, 50 per cent. *Thus, it is clear that during the period* 1962-63 *to* 1965-66 *there was no problem of diversion.* In 1966-67 and 1967-68 the percentage utilised of total cane for sugar fell to 23 per cent while that for gur and khandsari rose to 65 per cent simultaneously with a fall of about 22 per cent in 1966-67 and by about 19 per cent in 1967-68 in its total availability compared to 1965-66. It is also interesting to note that though prices of gur rose faster in 1963-64 and 1964-65 than the rise in sugar prices, the percentage utilised by gur and khandsari had actually fallen while that utilised for sugar had increased. These figures represent on all-India picture. The year 1966-67 was a drought year which had led to a shrinkage in the area under foodgrains and other cash crops. Production of sugarcane declined from 120 million tonnes in 1965-66 to 93 million tonnes in 1966-67. It may be added that the price index (base 1952-53=100) of gur fell from 210 in 1964-65 to 161 in 1965-66 while that for sugar rose only by two points from 151 to 153 in 1965-66 because of price control. *The diversion in* 1966-67 *can be attributed largely to lower sugarcane output at* 93 *million tonnes compared to* 120 *million tonnes in* 1965-66 *coupled with a spurt in the price index of gur which rose to* 211 *as against the index for sugar at* 163. In 1967-68, gur price index rose to an abnormal record of 458 while the sugar index moved upto 184. The following table shows trends in price indices of sugar and gur since 1953-54 to 1967-68.

TABLE 5.3

Price Indices of Sugar and Gur

Years	Price Indices (Base 1952-53=100)	
	Sugar	Gur
1	2	3
1953-54	99	141
1954-55	104	122
1955-56	94	86
1956-57	95	100
1957-58	110	107

1	2	3
1958-59	121	131
1959-60	123	161
1960-61	127	136
1961-62	125	116
1962-63	131	153
1963-64	139	218
1964-65	151	210
1965-66	153	162
1966-67	163	211
1967-68	184	458

Source.—Bulletin on Food Statistics by Directorate of Economics & Statistics, Ministry of Food & Agriculture.

Another point that needs to be emphasised is that if the price of gur claimed to be the main cause of diversion of sugarcane from sugar factories to gur manufacture, how can we explain the increase in demand for gur at higher prices which alone can cause such a diversion ? *As a matter of fact, if the prices of gur go up, the consumption demand for gur should be expected to fall.* Thus it seems that there might be other types of demand for gur. Attracted by high prices of gur the cane growers even in some of the co-operative factory areas are reported to have diverted their cane supply to gur manufacture. It has been suggested by some that one of the reasons for this somewhat peculiar phenomenon is that a part of this gur production finds its way to illicit manufacturing activities *e.g.*, in making potable alcohol. We have not sought to determine as to whether this explanation is well-founded.

5.5. The following table contains region-wise figures of utilisation of cane.

TABLE 5.4

State-wise percentage utilisation of sugarcane

State	Cane utilised for sugar						Cane utilised for gur & khandsari & other purposes					
	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
1. Uttar Pradesh	21	24	24	26	19	21	79	76	76	74	81	79
2. Bihar	36	46	60	66	49	39	64	54	40	34	51	61
3. Punjab & Haryana	8	9	10	15	10	10	92	91	90	85	90	90
4. West Bengal	25	6	7	7	6	6	75	94	93	93	94	94
5. Madhya Pradesh	..	17	23	21	8	4	..	83	77	79	92	96
6. Rajasthan	..	14	16	22	26	20	..	86	84	78	74	80
7. Maharashtra	38	39	55	66	56	51	62	61	45	34	44	49
8. Andhra Pradesh	24	25	27	31	21	21	76	75	73	69	79	79
9. Orissa	..	4	5	6	6	4	..	96	95	94	94	96
10. Mysore	20	16	29	27	11	12	80	84	71	73	89	88
11. Tamil Nadu	20	29	36	41	28	28	80	71	64	59	72	72
12. Kerala	..	25	66	73	24	16	..	75	34	27	76	84
13. Other States	..	22	18	24	22	21	..	78	82	76	78	79
ALL INDIA	22	25	28	31	23	23	78	75	72	69	77	77

Source : 1. Directorate of Economics & Statistics.

2. Directorate of Sugar & Vanaspati.

Looking at the matter region-wise, it would be noticed that particularly in the State of Maharashtra and to some extent in the States of Tamil Nadu and Bihar cane consumed for the production of sugar was decidedly higher than the all-India average. Nevertheless, even in these States the percentages were lower in 1966-67 and 1967-68 which were the years of short cane supply as compared to the year 1965-66.

Of the six years covered by this table, the year 1965-66 as well as the one just preceding saw the optimum utilisation of sugarcane for the production of sugar in those States of Maharashtra and Bihar. *For the first time during these three years, in the State of Maharashtra and Bihar, the share of sugar was well over* 55 *per cent and* 50 *per cent of the total production of sugarcane in these States. It was stated by way of explanation that the disappearance of buyer-seller relationship as between the grower and the factory through the operation of co-operatives is mainly responsible for this improved utilisation of sugarcane for sugar making in the State of Maharashtra.* It may be pointed out however, that the level of consumption of cane for sugar making has always been higher in this particular State. Moreover during the two years 1964-65 and 1965-66 the overall all-India utilisation of sugarcane for purposes of sugar manufacture was also relatively higher.

5.6. **Improvement in quality and efficiency of gur and khandsari**—*Gur making by vacuum process.*—The manufacture of gur by open pan boiling process is not scientific. It is difficult to achieve standardisation of quality of gur because molasses are not separated in the existing process. The extraction of juice from sugarcane is between 50 and 55 per cent and, as such, there is much wastage. Besides, there is heavy inversion losses in boiling the juice. It is clearly necessary to find out ways and means of manufacturing this product more efficiently. *It is understood that a new process of gur making, the vacuum process, has been developed by the National Sugar Institute. With the adoption of this process, it is stated that juice will be extracted to the extent of* 80 *to* 85 *per cent and gur recovery will be* 15 *to* 16 *per cent as against* 10 *to* 11 *per cent in the conventional open pan boiling process.* Another advantage is that there is no inversion loss and the gur if refined to sugar will give higher recovery. Because of vacuum there is also saving in fuel consumption. *By the adoption of this more scientific manufacturing process, production of gur is estimated to increase by about* 50 *per cent and would, therefore, help increase the supply of sweetening agents which could be marketed* more hygienically in convenient suitable pack sizes as an item of food. *Higher production of gur* in years of excessive supplies of cane (instead of unduly prolonging cane crushing by sugar factories) *accompanied by adequate storage facilities could also help* in a better raw material balance *if a part of this gur is later refined into sugar by sugar factories* either during their next crushing season or in the off-season. *This might help in providing to sugar factories a more economic utilisation of plant and manpower capacities without facing the very low recoveries which prolonged cane crushing* often entails. *The old system of producing khandsari is also being gradually replaced by the modern system of using power crushers and centrifugal machines.* This has resulted in substantial improvement in recoveries as well as in the quality of the khandsari sugar.

5·7. **Consumption.**—The following table shows estimates of per capita consumption of sugar, gur and khandsari from 1950-51 to 1967-68.

TABLE 5·5

Per capita consumption of sugar and gur and khandsari from 1950-51 *to* 1967-68.

(Kgs. per annum)

Year	Sugar	Gur and Khandsari	Total
1950-51	3·0	13·3	16·3
1951-52	3·2	13·3	16·5
1952-53	4·5	10·8	15·3
1953-54	4·9	9·8	14·7
1954-55	4·5	11·6	16·1
1955-56	5·0	7·9	12·9
I Plan Average	**4·4**	**10·7**	**15·1**
1956-57	5·0	12·8	17·8
1957-58	5·1	12·9	18·0
1958-59	5·0	13·2	18·2
1959-60	4·8	12·6	17·4
1960-61	4·8	14·9	19·7
II Plan Average	**4·9**	**13·3**	**18·2**
1961-62	5·7	14·0	19·8
1962-63	5·4	13·3	18·7
1963-64	5·0	14·0	19·0
1964-65	5·1	14·9	20·0
1965-66	5·7	14·0	19·7
III Plan Average	**5·4**	**14·0**	**19·4**
1966-67	5·2	12·0	17·2
1967-68	4·3	12·3	16·6

Source.—Sugar Enquiry Commission and the Development Programme for Sugar Industry for IV Plan.

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It will be observed from the foregoing table that the *major increase in the per capita consumption of sugar took place during the first three years of the First Plan when such consumption increased to* 4.9 *kgs. per head against the figure of only* 3 *kgs. per capita in* 1950-51. This seems to have been achieved clearly at the expense of gur and khandsari. This rising trend of sugar consumption continued even in 1953-54 which was a year of short supply of cane. From the year 1955-56 onwards *per capita* consumption of sugar generally hovered around 5 kgs. per annum. The consumption in the year 1961-62 to 5.7 kg. was the highest recorded so far. In 1964-65 although total consumption of sugar, gur and khandsari rose to an all-time high of 20 kgs. the share of gur over the previous year, increased more than that of sugar.

It would be noticed that *per capita consumption of sugar rose from* 3 *kgs. in* 1950-51 *to* 5.4 *kgs. per annum* (*Third Plan average*). *During* 1966-67, *which was the leanest of the lean years, per capita consumption of sugar registered a fall to* 5.2 *kgs. and further steeper fall to* 4.3 *kgs. per annum in* 1967-68. In 1966-67 sugar consumption could be maintained at a higher level than in 1967-68 through the utilisation of large carryover stocks of 1965-66 season. In the case of gur and khandsari however the trends were slightly divergent. There was a substantial fall in the average consumption of gur and khandsari during the First Plan period to 10.7 kgs. per annum against 13.3 kgs. in 1950-51. Thereafter the consumption rose to 14 kgs. per annum (Third Plan Average). This fell to 12 kgs. in 1966-67 presumably because of the large shortfall in sugarcane crop but with slight improvement in cane supply it rose to 12.3 kgs. in 1967-68. Taking sugar, gur and khandsari as a whole, average *per capita* consumption during the First Plan period fell to 15.1 kgs., compared to 16.3 kgs. in 1950-51 mainly because of the fall in consumption of gur and khandsari during that period, it rose progressively, to 18.2 kgs. and 19.4 kgs. during the next two Plan periods or by about 20 per cent in the 15 years from 1950-51 to 1965-66. The short crops of the next two years were reflected in a fall in the level of total per capita consumption. It is expected that 1968-69 which is a bumper year, would register an upward swing in the per capita consumption in each of the sweetening agents.

5.8. **Relation of sugar and gur prices.**—Generally *speaking, because of price control, prices of sugar moved within narrower ranges except for the years* 1966-67 *and* 1967-68 *when sugar was partially decontrolled. Gur prices throughout the period have witnessed wider fluctuations.* Another phenomenon to which attention may be worth drawing is that the price increase of gur over the period 1961-62 to 1967-68 has been of the order of 250 per cent, whereas in the case of sugar, the corresponding increase as between the controlled price of sugar in the former period and the free market price in the latter period of comparison, has been in the neighbourhood of 200 per cent.

Table given below shows the prices of sugar and gur at Madras centre.

TABLE 5.6

Prices of sugar and gur at Madras Market

Years	Actual prices per quintal at Madras Market (Rs.)	
	Sugar	Gur
1950-51	96·94	53·60
1951-52	90·80	42·05
1952-53	87.77	58.21
1953-54	86.75	47·41
1954-55	82 95	28·43
1955-56	88·76	35·54
1956-57	86 65	40 08
1957-58	104·04	39·80
1958-59	N.A.	N.A.
1959-60	N.A.	N.A.
1960-61	N.A.	N.A.
1961-62	111·41	51·25
1962-63	114·98	91·24
1963-64	117·23	82·52
1964-65	127·67	71·04
1965-66	136·75	76·96
1966-67	151·75	158·09
1967-68	170·70*	180·07

*The free market price averaged to Rs. 348 per tonne.

It would be observed from the table that *during the period* 1950-51 *to* 1955-56 *there was a simultaneous fall in both the price of gur and that of sugar.* The fall in the gur price was, however, steeper by over Rs. 18 per quintal compared to the fall of Rs. 8 in respect of sugar. It is also noticed that *over the same period, the per capita sugar consumption rose from* 3 kgs. *to* 5 *kgs. while that of gur declined from* 13.3 *kgs. to* 7.9 *kgs.* Thus the overall annual average of per capita sugar consumption for the First Plan period (1951-56) increased to 4.4 kgs. from 3 kgs. per head in 1950-51 while that of gur and khandsari declined from 13.3 kgs. to 10.7 kgs. during this period. If we look at the yearly price trends during this period *we notice that with the simultaneous fall in the prices of gur and khandsari* (though in the case of former decline was more) *the per capita sugar consumption during* 1951-52 *increased to* 3.2 *kgs. while that of gur remained unchanged at the previous year's* level. *With the further fall in sugar price coupled with the rise in gur price, the per capita sugar consumption jumped to* 4.5 *kgs. during* 1952-53 *while that of gur declined to* 10.8 *kgs.* During 1953-54 despite a larger decline in gur price compared to sugar price, the consumption of sugar per head further rose to 4.9 kgs. while that of gur further fell to 9.8 kgs. Thus the two years 1952-53 and 1953-54 witnessed a substantial increase in the sugar consumption clearly at the expense of gur. In both these years gur prices ruled well above 1951-52 level while the sugar prices ruled at a lower level. It is further interesting to observe that *in 1954-55 when gur prices dropped sharply by about Rs. 19 per quintal compared with the fall of less than Rs. 4 in the case of sugar, the per capita gur consumption increased from 9.8 kgs. to 11.6 kgs. while that of sugar was reduced from 4.9 kgs. to 4.5 kgs.* The last year of the First Plan witnessed a reversal of this trend presumably because, gur prices rose sharply by as much as 25 per cent whereas the sugar prices rose only by about 7 per cent over 1954-55. Consequently, during 1955-56 per capita sugar consumption rose to the level of 5 kgs. while that of gur touched the lowest level of 7.9 kgs. *While obviously a number of forces are at work and it is difficult to be precise, a comparative study of consumption and price data does seem to support the inference that relative price levels as between the two products do determine the levels of inter-se demand.* As against a purely theoretical parity of 1:1.5 *vide* Appendix 26 and generalising from the price/consumption level figures of 1951-55, *one could perhaps conclude that whenever gur prices fall to levels of something like one-third that of the price of vacuum pan sugar, the former begins to enjoy an edge over the latter.* As this ratio tends to approach 1 : 2, sugar consumption tends to rise at the expense of gur, as would be seen also from the figures of the two seasons 1961-62 and 1962-63.

It would be further observed that as gur prices went up in 1962-63, which was a year of short supply of cane, consumption levels of both gur and sugar fell. The price of sugar rose only by one point against the 25 point rise in gur price indices. The next three years (1963-66) were years of rising cane supply and sugar price indices which rose only by 12 and 14 points respectively, induced larger consumption of that commodity. In spite of a fall in gur price index in 1965-66, its production and per capita consumption dropped from 14.9 kgs. in 1964-65 to 14 kgs. per annum in 1965-66. It is noticed that in 1963-64 while sugar prices per quintal at Tamil Nadu rose by about Rs. 2, gur prices actually fell by Rs. 9 which seems to account for a fall in per capita consumption of sugar and a rise in per capita consumption of gur. In 1964-65, gur prices fell further and gur consumption rose substantially while sugar consumption rose only marginally because of further rise in price. In 1965-66 however, while sugar prices rose by Rs. 9 per quintal gur prices rose only by Rs. 6 yet the trend was reversed, sugar consumption recording a further substantial rise with a fall in actual per capita consumption of gur. Appendix 27 gives the comparative price indices of "sugar", "gur", "sugar and gur" taken together, as well as those of "foodgrains", "oilseeds" and "all commodities". It can be seen that while all those price movements are generally upward over these years, their year to year and inter-se spirals are so divergent that no clear correlation as between them is discernible.

5.9. **Prices of khandsari.**—The following statement shows the price of khandsari during the period September to December 1967, January to December 1968 and in January 1969 in the important markets at Bareilly, Hapur and Kanpur. During the month of September 1968 as compared with the corresponding month of the previous year the prices showed a declining trend ranging from 23 per cent at Bareilly to 27 per cent at Hapur and 26 per cent at Kanpur, the prices having declined per quintal from Rs. 370, Rs. 395 and Rs. 400 to Rs. 287, Rs. 290 and Rs. 295 respectively. The average prices per quintal during the last three months of 1968 as compared with the corresponding period of 1967 revealed a similar declining trend from an average of Rs. 353, Rs. 413 and Rs. 385 to Rs. 242, Rs. 243 and Rs. 256 respectively. In the month of January 1969, the price of khandsari sugar showed a moderate decline ranging from 25 per cent in the case of Hapur to 18 per cent at Bareilly with Kanpur showing a decline of 22 per cent from the prices ruling in January, 1968. *Understandably, there is closer correlation between the movement of sugar and khandsari prices than between sugar and gur prices.* During 1967-68 (November-October) at Kanpur the average price per quintal of sugar for free sale stood at Rs. 365, that of khandsari at Rs. 315 and of gur at Rs. 186. Figures of January 1969 per quintal were Rs. 255 for khandsari, Rs. 334 in respect of sugar and Rs. 98 for gur at Kanpur market.

TABLE 5.7

Wholesale prices of Khandsari

(Rs. per quintal)

Market	Bareilly	Hapur	Kanpur
1967			
September	370	395	400
October	381	490	390
November	388	450	400
December	289	300	365
1968			
January	275	300	325
February	280	300	325
March	297	280	320
April	335	342	352
May	295	300	325
June	265	260	230
July	254	275	275
August	285	280	295
September	287	290	295
October	260	220	268
November	245	260	250
December	220	250	250
1969			
January*	226	225	255

*For First or second week.

Source.—Agricultural Prices Commission's Report on price policy for sugarcane for 1969-70.

5.10. **Exports.**—It is noted from the Appendix 28 that exports of cane jaggery are negligible. They dwindled from 3166 tonnes in 1965-66 to just 103 tonnes in 1967-68. In 1968-69, however, there was a little improvement in export when 516 tonnes of jaggery were exportted. In terms of value earned in the year 1966-67 stood highest when a sum of about Rs. 18 lakhs was realised although the quantity of export was less than that of the year 1965-66. The countries to which the major portion of the total export had been made during the years 1965-66 and 1966-67 were Ceylon, Nepal, Saudi Arabia, Aden and Malaysia.

5.11. A summary of broad indicators in respect of sugar, gur and khandsari during the last 17 years is given below while details are given in Appendix 29.

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Summary of broad indicators in respect of sugar, gur and khandsari

(Figures in million tonnes unless specified)

Sl. No.	Item	1950-51	Annual Average 1st Plan	Annual Average 2nd Plan	Annual Average 3rd Plan	1966-67	1967-68	Percentage increase in 1967-68 over 1950-51	Annual increase or decrease percentages 1967-68 over 1950-51
1	Cane Production	69	67	91	109	93	97	40.6	2.4
2	Cane utilisation—other uses	9	8	11	13	11	12	33.3	1.9
3	Cane Net Availability	60	59	80	96	82	85	41.7	2.4
4	Cane Utilisation for Sugar manufacture	11	15	23	29	22	22	100.0	5.9
5	Cane Utilisation for Gur & Khandsari manufacture*	49	44	56	66	60	63	28.6	1.7
6	Production of Sugar	1.1	1.5	2.3	2.9	2.2	2.2	100	2.4
7	Production of Gur and Khandsari*	3.4	3.0	5.6	6.6	6.1	6.3	85.3	5.0
8	Consumption of sugar	1.1	1.7	2.1	2.5	2.7	2.1	90.9	5.2
9	Consumption of gur & Khandsari	3.4	3.0	5.6	6.7	5.1	6.3	85.3	5.0
10	Consumption of sugar, gur & Khandsari	4.5	4.7	7.7	9.2	8.8	8.4	87.7	5.2
11	Per capita consumption—Sugar (Kg.)	3.0	4.4	4.9	5.4	5.2	4.3	86.6	5.1
12	Per capita consumption—Gur & Khandsari (Kg.)	13.3	10.7	13.3	14.0	12.0	12.3	(—) 8.0	(—) 0.5
13	Per capita consumption—Total of sugar gur and Khandsari (Kg.)	16.3	15.1	18.2	19.4	17.2	16.6	3.7	0.2
14	Price Indices (base 1952-53 = 100)								
	(a) Sugar	97	101	114	139	160	177	72.5	4.3
	(b) Gur	202	120	126	172	183	418	106.9	6.3
	(c) Sugar & Gur	163	113	121	159	175	329	40.5	2.4

*Estimated after deducting from total cane production figures of utilisation of cane by sugar factories and by other uses.

Source : Directorate of Sugar and Vanaspati for details given against Sl. Nos. 1, 4, 6, 8, 11 and 14.

CHAPTER 6

BY-PRODUCTS OF SUGAR INDUSTRY

6.1. The by-products of sugar industry consist of (a) Bagasse, (b) Molasses and (c) Press mud. In addition a sizeable amount of cane trash is left out in the fields after the harvesting of cane.

6.2. **Bagasse.**—Bagasse accounts for about 28 to 30 per cent of cane in Southern and Western regions and 30 to 35 per cent in the Northern region. *The principal known uses to which bagasse can be put to are either as fuel or as a raw material for the manufacture of paper, pulp, newsprint and insulation boards.* The following table gives an account of cane crushed. bagasse as percentage of cane and estimates of bagasse production

TABLE 6.1

Estimates of bagasse production

Year	Crane crushed	Bagasse	Bagasse as percentage of cane
	(in thousand tonnes)	(in thousand tonnes)	
1964-65	33,370	10,735	32·17
1965-66	36,642	11,912	32·51
1966-67	21,595	6,867	31·80

Average production of the country works out to about 32 per cent on cane.

Bagasse can also be used after chemical treatment for the production of plastics, moulding powder, cattle feed, bio-gas, manure, etc. At present bagasse is being almost entirely used by the sugar factories as fuel in the boilers. The production of bagasse depends on the fibre content of sugarcane which varies from 13 to 15 per cent in Western and Southern zones and 15 to 18 per cent in the Northern zone. Until few years ago, most of the sugar factories were not self-sufficient in bagasse. They had to use extra fuel in the shape of wood, coal or furnace oil. But, as a result of fuel economy measures, most of factories are now able to save some bagasse after meeting their entire fuel requirements. *Bagasse is rich in cellulose and is used as a raw material for the manufacture of paper.* With an increasing demand for paper and board and a developing shortage of other natural pulping materials such as Bamboo and Sabai grass, there is considerable scope for the increased utilisation of bagasse for the production of paper and pulp. At present only five paper mills with a combined annual capacity of 1·80 lakh tonnes are consuming bagasse to supplement their raw material requirements. *The further development of bagasse-based paper industry might, in the long run, prove to be an important step for a more economic utilisation of this by product of the sugar industry.*

The means by which the increasing quantity of bagasse can be progressively diverted for the production of paper, would need more careful and detailed examination. At the early stages one need consider only the more effective mobilisation of surplus bagasse resulting from improved fuel economies, for conversion into cellulosic pulp for paper making. One of the suggestions that have been made to us in this connection is that—

(1) *sugar factories should be encouraged to effect further fuel economies in order to create surpluses of bagasse to the maximum extent practicable;*

(2) they should either convert this bagasse into pulp themselves or sell it to centrally located pulping units to serve a number of sugar factories in the neighbourhood; and

(3) it would be more advantageous to have a larger number of small capacity, say 10 to 20 tonnes per day pulping units so that the pith on being separated from the cellulosic constituents of bagasse, could be readily utilised by the sugar factories themselves as fuel.

The Commission understands that such schemes of bagasse utilisation have been considered by several committees but much headway has not been made due to one difficulty or another. On the other hand, we further understand that certain other major sugar producing countries like Cuba, Hawaii and the Philippines have already largely substituted bagasse as fuel for sugar making. *Therefore, having regard to the long term aspects of the matter, we would suggest that the reasons for the persistent reluctance of the Indian Industry to the progressive substitution of bagasse by other fuels for sugar manufacture, may be further investigated. Utilisation of bagasse for the manufacture of furfural.* We have been informed that lately there has been a good demand for furfural and quite an appreciable quantity has been imported. The prevailing market price appears to be quite attractive and on the basis of experiments carried out at the National Sugar Institute, it seems that the process of its manufacture is relatively simple. It is further learnt that several queries have already been received from some parties for ascertaining the know-how regarding the maunfacture of furfural in this country. *The manufacture of furfural from bagasse appears to be another desirable step towards the import substitution* even though the extent of utilisation of bagasse may be small. *It is suggested that the National Sugar Institute should give wide publicity to the results achieved through its experiments.*

The researches conducted at the National Sugar Institute, Kanpur have shown that the *bagasse with other agriculture waste can also be used for conversion into biogas for fuel and bio-manure.* The bio-manure so obtained is considered as useful manure rich in nutrients like potassium, calcium, phosphorous and nitrogen. These are some of the other directions of bagasse utilisation which would require to be further explored.

6.3. **Molasses.**—Molasses is presently the main by-product obtained in the manufacture of sugar and commands a ready market. The figures relating to production of molasses, molasses per cent cane and molasses per cent sugar during 1964-65 to 1966-67 are given in the following table :

TABLE 6·2

Production of molasses, molasses per cent cane and molasses per cent sugar

Season	Production (in thousand tonnes)	Molasses percent cane	Molasses percent sugar
1964-65	1339	4·00	41·42
1965-66	1519	4·17	43·01
1966-67	846	3·91	39·18

[*Source :* I.S.M.A.'s Statistical Division—Indian Sugar Year Book 1966-67.]

A considerable quantity of molasses produced in the sugar factories is used by the distilleries manufacturing industrial alcohol and portable spirit. Besides, molasses is also used as manure, cattle feed and for tobacco curing. Some quantity finds its way for use in foundries also. According to the All India Distilliers' Association, the actual availability of molasses for distilleries during the last two years amounts to 70 per cent of total production of molasses by sugar factories. Of the remaining 30 per cent, it is understood, 3 to 5 per cent of molasses is used for tobacco curing and foundries. The unaccounted balance is reported to be wasted in handling, transportation or due to improper storage conditions in the sugar factories. In view of the fact that the major proportion of its constituents are sugars (to the extent of 45 to 54 per cent) the most rational use of the molasses appears to be for the production of alcohol which in turn is used for the manufacture of other derivatives which form the base for several chemical industries. *The main difficulty standing in the way of better utilisation of the entire production of molasses seems to be the absence of adequate storage facilities as well as distribution and transport facilities from the sugar factories to the various consuming industries* spread all over India. Some of these problems including the question of price of molasses have been examined at greater length in our Report on Alcohol Prices.

6.4. **Press mud.**—Production of press mud is about 3 per cent of the cane in sulphitation factories and nearly 7 per cent in carbonation factories. The sulphitation press mud is almost entirely supplied to cultivators either free or at a nominal price for their use as manure in the fields. The carbonation press mud is generally used to fill up pits and in some cases for the production of lime for buliding purposes.

The Central Building Research Institute has recently evolved a method of converting it into building lime according to the Indian Standards Institution specification. At present it appears that carbonation press mud has no other commercial use. Since the bulk of the present expansion of the sugar industry is in the peninsular region where only sulphitation factories are being put up, the problem of utilisation of carbonation press mud is not likely to increase in the future.

The sulphitation press mud contains sugarcane wax varying from 8 to 10 per cent of mud. Attempts have been made to extract wax which can be used in place of imported carnauba in the manufacture of carbon paper, leather and other polishes, wax paper and emulsion for coating purposes for preservation of fruits etc. We are informed that there are already two units which extract crude wax and supply to the market. These two plants do not, however, work regularly as the demand is not sufficient and stable. We understand that pilot plant trials at the National Sugar Institute for the production of refined and modified wax and blending them in a suitable proportion to make them suitable for preparation of the desired quality of polish and carbon papers etc. are soon to be undertaken. *We therefore, suggest that the National Sugar Institute may complete its investigations and provide the know-how for the industrial production of proper blends of waxes and thus throw open the possibilities of sizeable quantities of sulphitation press mud being utilised for the production of wax.*

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CHAPTER 7

CONTROL ON SUGAR PRICES AND DISTRIBUTION AND FISCAL MEASURES

7.1. **History of Price & Distribution Control.**—Prior to the imposition of statutory control in 1942 price of different qualities of sugar manufactured by factories in Uttar Pradesh and Bihar used to be fixed on an informal basis by the Indian Sugar Syndicate in the context of ruling market conditions including the price of Java Sugar and the position of demand and supply in the country. Statutory control over the prices and distribution of sugar was imposed by the Government for the first time in April, 1942 by an order under the Defence of India Rules called the Sugar Control Order (later amended and reissued as Sugar and Sugar Products Control Order). The production, distribution and fixation of prices of sugar were regulated by the Sugar Controller to the Government of India and by authorities holding delegated powers from him. Since then the Sugar Industry has passed through various phases of control, de-control and partial control. The period from 1st May, 1942 to 7th December, 1947 was a period of control followed by de-control from 8th December, 1947 to 1st September 1949, and again from 2nd September, 1949 statutory control was re-imposed. In December 1950 control was relaxed and a policy of selective control was followed, In view of the improved position, control on sugar was removed in 1952-53 except for the small part reserved for controlled distribution. During the season 1953-54, there was however no control on prices and distribution of sugar but in April 1954 Government requisitioned 25 per cent of the production of all the factories for distribution on a tender bases. From 1954-55 to 1956-57 the Industry again enjoyed a period of de-control followed by re-imposition of control during 1957-58. The Tariff Commission's Report on Cost Structure of Sugar and Fair Price Payable to Sugar Industry (1959) provides details of the working of controls upto the period 1957-58. The position thereafter can be briefly described as under :

7.2. **Control.**—During the season 1958-59 ex-factory prices fixed under the Government Notification of 30th July, 1958 were continued. Government also decided in 1958 to acquire and distribute sugar at fixed prices. Other measures adopted were (i) tightening of bank advances, (ii) licensing of wholesale dealers of sugar by the State Government. (iii) banning of movenent of sugar from Delhi and Greater Bombay, (iv) assigning of specific quotas to individual States and (v) banning of inter-State movement of sugar. With effect from 1st July, 1959 Government took over the entire production of sugar for direct allocation. With a view to maximising sugar production during the seasons 1959-60 and 1960-61 Government announced for the first time, incentives such as (i) concession of 31 paise per maund (83 paise per quintal) in the minimum price of cane in the factories of Uttar Pradesh and Bihar, (ii) rebate of 50 per cent in the basic excise duty on all sugar produced in excess of the average of the previous two seasons and (iii) relaxation and ultimate withdrawal of margin requirement on bank advances.

7.3. **De-control of prices, distribution and movement.**—A a result of the incentives announced, the sugar production and supply position during 1959-60 and 1960-61 eased considerably and Government decided to remove all controls over prices, distribution and movement of sugar with effect from 28th September, 1961, excepting the regulation of monthly release of sugar from factories. During 1960-61, the production of sugar exceeded 30 lakh tonnes. The carryover stock at the end of that year was as high as 12·60 lakh tonnes compared to the yearly average year-end stock of 4 lakh tonnes during the years 1957 to 1961. *With a view to avoiding over production of sugar, the Government promulgated the Sugar (Regulation of production) Ordinance* 1961 *(later replaced by an Act) on* 29*th September* 1961 *and imposed a* 10 *per cent cut based over the* 1960-61 *output on the production of sugar during the year* 1961-62.

7.4. **Re-imposition of control.**—As a result of the Ordinance, the fall in cane acreage from 2,413 thousand hectares in 1960-61 to 2,242 thousand hectares in 1962-63 and the decline in the sugarcane production from 110 million tonnes in 1960-61 to about 104 million tonnes in 1961-62 and further to about 92 million tonnes in 1962-63, sugar production witnessed a marked fall from 30·3 lakh tonnes in 1960-61 to 27·1 lakh tonnes in 1961-62 and further to 21·5 lakh tonnes in 1962-63. With the fall in sugar production prices started rising from the middle of January 1963. The wholesale prices of sugar which stood at about Rs. 109 per quintal at Delhi in December, 1962 rose to about Rs. 115·00 per quintal in January, 1963. In order to arrest this upward trend in prices Government made larger releases of sugar and also took other measures such as (i) stepping up of wagon supply for the movement of sugar, (ii) re-introduction of the system of licensing of wholesale dealers in sugar, (iii) adivising the factories in Western U. P. to offer prices above the minimum fixed for sugarcane, (iv) suggesting to the Uttar Pradesh Government to discourage licensing of cane crushers in sugar areas and (v) banning of forward trading in gur with effect from 18th January, 1963. *Despite all these measures prices of sugar continued to move upward and the wholesale prices ranged between Rs.* 116—120 *per quintal in the beginning of April* 1963 *compared to Rs.* 104—112 *in December* 1962. To check this rising trend the Government of India promulgated the Sugar (Control) Order, 1963 re-imposing controls on price and distribution of sugar with effect from 17th April, 1963. The ex-factory prices initially fixed by Government in April 1963 for different regions were lower than the ruling market prices and ranged between Rs. 108·50 to Rs. 113·85 per quintal. Subsequently however, *these prices were revised in November* 1963 *and in many cases prices so revised were higher than the ruling prices prior to the imposition of control* and ranged between Rs. 111·25 to Rs. 122·00 per quintal. Distribution of sugar within the States was left to the State Governments. They were, however, advised to keep a check on the activities of the wholesale and retail dealers.

The following were the ruling prices in certain centres before control.

TABLE 7·1

Wholesale prices in different centres

(Rs. per quintal)

	Delhi	Kanpur	Calcutta	Bombay	Madras
December, 1962 . .	108·64	104·22	107·60	111·19	111·78
January, 1963 . . .	114·75	109·00	115·55	113·52	118·58
February, 1963 . .	114·33	112·00	117·89	116·89	119·55
March, 1963 . . .	118·23	113·76	117·59	119·55	121·26
April, 1963 . . .	116·00	N.R.	120·00	116·98	N.R.

(*Source* : Directorate of Sugar and Vanaspati).

7.5. **Basis for price fixation.**—The two criteria for fixation of sugar prices under the Sugar (Control) Order, 1963 were (a) estimated cost of production as determined in accordance with the relevant cost schedules prepared by the Tariff Commission in 1959 and adjusted from time to time so as to provide for increases in cost and (b) average of the prices at which sugar was sold by the producers in an area during such period not more than three months or less than two months immediately before the 1st April, 1963 as the Central Government thought fit. The latter criterion was considered necessary with a view not to disturb the sugar economy of the various regions, all of a sudden, namely, that the factories in the deficit areas under free market conditions realised a higher price depending upon the landed cost of sugar from the surplus areas. For this purpose the basic area was considered to be a State except in the case of Bihar which was divided into North Bihar and South Bihar. It was also considered reasonable to apply the relevant schedules to factories grouped on the State-wise basis in accordance with the recommendations of the Tariff Commission in its Report on the Revision of the Price-Linking Formula. The fair price for each factory was worked out on the basis of its duration and recovery according to the schedules given in its Report (1959). The Government of India had fixed prices for 16 regions in April 1963 instead of the four suggested in the Tariff Commission's 1959 Report. Representations from almost all factories were made to the Government to the effect that prices thus fixed were uneconomic and did not provide fully for the increased cost since 1957-58, the base year adopted by the Tariff Commission in the preparation of its cost schedules. Against this background of wide variations between cane prices and also the estimated recovery and duration, and after careful consideration Government increased the number of zones to 17 in July, 1963 and to 21 on 18th November, 1963. In May, 1964 the number of zones was 20.

7.6. **Prices during 1964-65.**—Simultaneously in August 1964 the Government of India appointed a Sugar Enquiry Commission under the Chairmanship of Dr. S. R. Sen to examine, among other things the cost structure of sugar and prepare cost schedules for arriving at the fair price payable to the Industry. *The Sugar Enquiry Commission recommended five cost schedules for five zones and suggested fixation of price on the basis of these zones and a special price for Assam.* It was considered by the Government that by fixation of prices on the basis of the zones suggested by the Sugar Enquiry Commission, factories in certain areas would be hit hard while it might at the same time, result in a windfall gain to factories in certain other areas. The prices for the 1964-65 season were therefore, calculated as in the final price calculations for 1963-64, that is, on the basis of estimated recovery and duration in accordance with the Tariff Commission's cost schedules. Government fixed six effective prices on 12th November, 1964 ranging from Rs. 116 to 129·25 per quintal for 20 zones.

7.7. **Price for 1965-66 and 1966-67.**—*Government* after taking into account large variations in duration and recovery in the five zones recommended by the Sugar Enquiry Commission *fixed* 20 *prices for* 23 *smaller zones* ranging from Rs. 124·35 to Rs. 140·85 per quintal for the season 1965-66. For the season 1966-67, 23 *prices for* 23 *zones were fixed by the Government* varying between Rs. 132·56 and Rs. 187·10 per quintal. The fixation of prices for 23 zones was challenged by some factories before the Delhi High Court which, however, dismissed the appeal. The High Court however granted leave to appeal to the Supreme Court.

7.8. **Price for 1967-68 and 1968-69.**—As mentioned by us already, because of the drought the year 1966-67 turned out to be the worst in the decade for the sugar industry. Production of cane fell by about 22 per cent and that of sugar by about 40 per cent as compared to 1965-66. Further, prices of gur and khandsari, which were not controlled rose to high levels. The utilisation of cane by sugar factories fell from about 31 per cent of the total production in 1965-66 to 23 per cent in 1966-67 while the share of gur and khandsari, rose from 57 per cent to 65 per cent. The outlook for 1967-68 was even more gloomy due to a further fall in area under cane by about 11 per cent.

Partial de-control.—In order to provide incentives to maximise sugar production and increase the competitiveness of the sugar factories *vis-a-vis* khandsari and gur industries in securing cane by offering a higher price than the minimum fixed, *the Government of India in August,* 1967 *announced partial de-control of sugar* with the provision that for the year 1967-68, a quantity equal to 60 per cent of the production during 1st October, 1966 to 30th September, 1967 would be acquired from the sugar factories at a fixed "levy" price. The balance 40 per cent of production was left for free sale in the open market. Government also decided to fix levy prices of sugar for five zones as recommended by the Sugar Enquiry Commission. The levy prices fixed on 8th December 1967 and subsequently amended in May 1968 varied from Rs. 145 to 169·50 per quintal based on (a) the minimum price fixed for sugar, cane by the Central Government, (b) the manufacturing cost of sugar, (c) the duty or tax if any paid thereon under the notification fixing the levy prices of sugar and (d) reasonable return on capital. In July 1968 the prices were revised downwards ranging from Rs. 139·02 to Rs. 165·72 per quintal for the various zones. The amendment made in August 1968 related only in respect of certain factories in Zone V without affecting the range as mentioned earlier. The ratio between levy sugar and free-market sugar was refixed at 70 per cent and 30 per cent respectively for the season 1968-69. Different prices were also announced from time to time for various areas or for different factories for various grades of sugar. These details have been given in Appendix 30.

7.9. **Selling system for levy and free sugar.**—The prevailing selling systems for levy and free sugar are briefly described below:

Levy sugar : Under the pattern of controlled disribution of sugar, it is obligatory on the part of sugar factories to sell the levy sugar to the State Governments' nominees who in turn issue sugar to the retailers *i.e.* Ration Shops who sell it to the consumers. The actual pattern being followed in distribution of levy sugar is as under:

(i) The Directorate of Sugar and Vanaspati, Ministry of Food and Agriculture, issues monthly release order to every State under advice to the concerned sugar factories.

(ii) The Commissioner of Civil Supplies of the State issues orders to the District Collectors allocating the quota for each district.

(iii) The District Collectors in turn issue allotment order to the licensed dealers under advice to the concerned sugar factories.

(iv) The Civil Supplies Authorities sub-allot the stock lifted by the wholesalers to various dealers and retailers. In statutory rationing areas the card holders are attached to particular retail ration shops and on the basis of their requirement the retailers are allotted sufficient sugar for mnnthly distribution.

Free Sugar : Free Sugar is being sold to the licensed dealers at the prices prevailing from time to time. The sugar factories receive release orders from the Directorate of Sugar and Vanaspati, and the factories are required to dispose of the released quantity within a stipulated time. The sugar in open market is sold through selling agents, commission agents, or by inviting tenders. The wholesalers/dealers after purchasing and lifting sugar from the factories sell it in the open market to the retailers.

Fiscal Controls

7.10. **Central excise duty**.—The excise duty on sugar was levied for the 1st time in April 1932. The following table shows the progressive increases in that duty since then.

TABLE 7.2

Rate of excise duty on Sugar

Date of imposition		Rate of excise duty per Quintal in Rs.
1-4-1932		3·56
1-4-1934		2·60
28-2-1937		3·94
1-4-1942		5·92
1-3-1949		7·37
1-3-1955		11·06
16-5-1957		22·15
14-12-1957		28·65
	(Rs. 22·15 plus Rs. 6·50 per quintal additional excise duty in lieu of sales tax.)	
1-3-1966		37.00
	(Rs. 30·50 excise duty plus 6·50 additional excise duty in lieu of sales tax.)	
15-11-1967		28.65
(On sugar produced on and or after 1-10-1967).	(Rs. 22·15 excise duty plus Rs. 6·50 additional excise duty in lieu of sales tax.)	
1-3-1969	23 per cent *ad valorem.*	

With effect from June 16, 1969 the tariff value for free sale sugar was fixed at Rs. 200/- per quintal which was revised with effect from July 21, 1969 from Rs. 200/- to Rs. 190 and since reduced to Rs. 160/- per quintal from 21st August. The levy sugar continues to be subject to the excise duty of 23 per cent *ad valorem.*

The current rate of excise duty on Khandsari provided with or without the aid of sulphitation is 12½ per cent *ad valorem.* There is no excise duty on gur.

7.11. **State purchase tax on sugarcane.**—A purchase tax on cane crushed is levied by the State Governments at rates varying from State to State, details of which are given in the following table.

TABLE 7.3

Rate of purchase-tax

Uttar Pradesh	51 paise per quintal.
Bihar	51 paise per quintal.
Haryana	24·12 paise per quintal.
Punjab	24·12 paise per quintal.
Madhya Pradesh	32 paise per quintal.
Maharashtra	½ paisa per kilogram.
Gujarat	10 per cent of the cost of sugarcane.
Andhra Pradesh	Rs. 5/- per tonne.
Tamil Nadu	Rs. 5/- per tonne plus 4% sales tax.
Mysore	10 per cent of the cost of cane.
Kerala	Purchase-tax at 5% of value of cane.
Pondicherry	Rs. 5/- per tonne plus 1% purchase-tax on value of cane.
Orissa, Assam, West Bengal and Rajasthan .	Nil.

7.12. **Co-operative Societies commission for supplying cane to factories**:—Under the provisions of the Cane Acts and Rules obtaining in the States of Uttar Pradesh, Bihar, Haryana, Punjab and Madhya Pradesh, a portion of the cane supplied to sugar factories is required to be routed through the Sugar Cane Cooperative Societies which are paid a commission between 13 to 15 paise per quintal of cane.

7.13. **Rebates on Excise duty**:—With a view to augmenting production of sugar in 1963-64 Government decided to grant to the sugar industry a rebate of 50 per cent in the basic excise duty for the excess of production between July 1, 1963 and 31st October, 1963 over the production in the corresponding period of 1962. As regards factories which commenced production in November, 1963, a similar rebate on additional production over November, 1961 was allowed. For additional production during the normal season between November 1 or December 1, 1963 and March 31, 1964 or thereabouts the factories were entitled to a rebate in basic excise duty to the extent of 20 per cent. On additional production during the remaining period upto June 30, 1964, the factories were entitled to a rebate of 50 per cent.

7.14. To compensate factories for lower recovery obtained during the summer months of May and June, the Government announced on June 29, 1966 partial exemption to the extent of 25 per cent of basic excise duty on sugar produced during May-June, 1966 by factories in excess of the average quantity of sugar produced during the corresponding period in the years 1960-61 to 1964-65.

7.15. Under the Goernment's policy of partial decontrol announced on 16-8-1967, a rebate was allowed to factories at a flat rate of 50 per cent of the basic excise duty on the output of sugar in 1967-68 which was in excess of 80 per cent of the production in 1966-67 (October-September).

7.16. **Rebate in cess/purchase tax.**—A rebate in cane cess/purchase tax at prescribed rates was given to sugar factories from time to time for early crushing by the Governments of Uttar Pradesh, Bihar and Punjab as an incentive to increase sugar production.

CHAPTER 8

ZONAL DISTRIBUTION OF FACTORIES

8.1. For the first time in 1937 cost schedules were prepared by the late Shri R. C. Srivastava, Director, Indian Institute of Sugar Technology, Kanpur. At that time Uttar Pradesh and Bihar accounted for more than 80 per cent of the total sugar production, and the Srivastava Schedule was mainly based on the cost of production of these two States. The schedule was worked out for a duration ranging from 100 to 150 days, recovery of sugar at 9·5 per cent and an average crushing capacity of 750 tons per day. The schedule incidentally, helped to determine the share of cane growers in the net realisations of sugar manufacture.

8.2. In 1950 the Tariff Board taking into consideration the changes that had taken place in the structure of Sugar Industry (in the cost of raw materials, stores and wages after 1937) recommended the preparation of fresh schedules on the basis of the costs then prevailing not only in Uttar Pradesh and Bihar but also in other parts of the country where new units had come up. In 1951 the Government appointed the First Expert Committee under the Chairmanship of the late Dr. B. V. Narayanaswamy Naidu, which examined the cost of manufacture of 45 units and prepared a schedule for duration ranging from 60 to 160 days, reduced to 10 per cent recovery and applicable for an average crushing capacity of 1,000 tons per day. The Committee submitted its report in 1953. The Government referred the Naidu Schedule to a Second Expert Committee, headed by Shri P. A. Gopalakrishnan in 1955 and this Committee recommended certain additions to items of cost under depreciation, interest and overhead charges. The Second Committee came to the conclusion that separate schedules for different regions were desirable but made certain amendments to the earlier schedule and recommended that these be used until such time as regional schedules were prepared. Representations were subsequently made by the Industry that the manufacturing expenses allowed did not cover the increases in cost which had taken place and that allowance for rehabilitation charges and profits were inadequate. On the other hand, representatives of cane growers maintained that the costs as calculated were on the high side. In view of these conflicting opinions, Government felt the need for a fresh examination and requested us to re-examine the cost structure of sugr and fair price payable to the Industry.

8.3. The Tariff Commission in its (1959) Report on the Cost Structure and Fair Price Payable to the Sugar Industry grouped the sugar factories in various States into four zones, based on standard schedules for a uniform recovery of 10 per cent and for duration ranging from 90 to 200 days.

	No. of factories	Duration (days)	Average capacity worked per day (Tons)
1. Northern Region comprising the States of Uttar Pradesh, Bihar and Punjab	102	90–180	1,117
2. Bombay State	21	110–200	893
3. Madhya Pradesh and Rajasthan	8	90–180	596
4. Southern Region comprising the States of Andhra Pradesh Tamil Nadu and Mysore	20	90–200	1,026

8.4. Some State Governments represented that the Northern Zone as recommended by the Tariff Commission was too large with wide internal disparities in costs with the result that the uniform price fixed for the zone showed large differences in profit margins. A Commission headed by Dr. S. R. Sen was appointed for considering the price of sugar, amongst other related matters, in 1964. In its final Report the Sen Commission recommended five cost schedules for the same number of zones at 10 per cent recovery and for different numbers of crushing days for each zone as shown below. Assam with only one factory was to be treated as a separate zone on account of its peculiar location. The zones recommended were as follows:

		Duration	
		Minimum	Maximum
Zone I	Gujarat, Maharashtra, North Mysore, North Andhra Pradesh	110	180
Zone II	Orissa, rest of Andhra Pradesh, South Mysore, Tamil Nadu, Pondicherry and Kerala	90	200
Zone III	Meerut, Muzaffarnagar and Bulandshahar Districts of West Uttar Pradesh, Punjab, Rajasthan and Madhya Pradesh	90	180
Zone IV	Central and rest of West Uttar Pradesh	90	180
Zone V	East Uttar Pradesh, Bihar and West Bengal	90	180

8.5. In developing the cost schedules with regard to zones I, III, IV and V, the Sen Commission assumed that the quantity of cane crushed per day would fall by 10 per cent during the interval from 160 days to 170 days, and by a further 20 per cent between 170 and 180 days. In respect of zone II it was estimated that the quantum of cane crushed per day would fall by 10 per cent during the interval from 180 to 190 days and by another 20 per cent between 190 and 200 days.

8.6. **The zonal schedules prepared by the Sen Commission showed the average manufacturing and other costs of all the factories in a zone for different numbers of crushing days.** The weighted average manufacturing charges of all the factories within a zone were adopted for working out the schedule. Durations of 90 days, 100 days, etc. were adopted for three capacity groups, *viz.*, upto 1000 tonnes, 1001 to 1,500 tonnes and above 1,500 tonnes of cane per day. Further, due weightage was given for the actual capacity in each group and the weighted average cost for all the groups was worked out for different durations at 10 per cent recovery. The ex-factory price for Assam was to be fixed on the basis of the price for zone V plus the average cost of transport from a suitable rail head in North Bihar to the factory site in Assam.

8.7. The Sugarcane Breeding Institute, Coimbatore had suggested divisions of the whole country into the following five regions on the basis of agroclimatic and other considerations.

Region A : Gujarat, Maharashtra, North Mysore, North Andhra Pradesh and South Madhya Pradesh.

Region B : Kerala, South Mysore, Madras, Pondicherry, rest of Andhra Pradesh and Orissa.

Region C : Bihar, Uttar Pradesh (barring the terai area all along Uttar Pradesh and Bihar), South Punjab, Rajasthan and North Madhya Pradesh.

Region D : Terai areas of Uttar Pradesh and Bihar and North Punjab·

Region E : West Bengal and Assam.

The Sen Commission recognised that after the potentialities of sugarcane development from the agroclimatic standpoint were appropriately exploited through research and development works such as irrigation and drainage, it should be possible to re-classify the sugar production areas in the country into five regions as suggested by the Sugarcane Breeding Institute, Coimbatore. The Commission had added that the zones should, as far as possible, be more or less akin to those recommended by the Tariff Commission in its 1959 Report.

8.8. After consideration of the report, Government under the Sugar (Control) Order, 17th April, 1963 fixed prices for 16 zones as follows:

1. Uttar Pradesh
2. North Bihar
3. Punjab
4. West Bengal
5. Assam
6. Orissa
7. Rajasthan
8. Madhya Pradesh
9. Maharashtra
10. Gujarat
11. Andhra Pradesh
12. Madras
13. Mysore
14. Pondicherry
15. South Bihar
16. Kerala.

Further, in July 1963, the number of zones was increased to 17 as Uttar Pradesh was split into two *i.e.*, West and East and in the same year West U. P. was divided further into two zones bringing the number to 18. In November 1963, the number of zones increased to 21 by sub-dividing East U. P., North Bihar and Andhra Pradesh into two each.

8.9. In May 1964 West U. P. which had two Zones was further sub-divided into four and East U. P., North Bihar and Andhra Pradesh each of which had two Zones were converted into one zone each. Thus the total number of zones in May 1964 came down to 20.

8.10. **In November 1964 the Government of India considered that too many prices were not conducive to the efficiency of the Industry and after some** *ad hoc* **adjustments in the calculated prices enforced six effective prices though the number of Zones was 20. The number of Zones increased to 23 for the years 1965-66 and 1966-67** by sub-dividing Gujarat and Mysore each into Zones and by adding Haryana as a separate zone. Subsequently in December 1967, Government fixed prices for six zones including Assam. The position now remains the same.

8.11. The Zones as recommended by the Tariff Commission in 1959 and by the Sen Commission in its final Report are brought together below:—

Zones as recommended by Tariff Commission and Sen Commission in its final Report

	Tariff Commission		*Sen Commission Final Report*
Zone I	*Northern Region* (Uttar Pradesh,)Bihar and Punjab).	*Zone* I	Gujarat, Maharashtra, North Mysore and North Andhra Pradesh.
Zone II	Madhya Pradesh and Rajasthan.	*Zone* II	Orissa, rest of Andhra Pradesh, South Mysore, Madras, Pondicherry and Kerala.
Zone III	Bombay State, Gujarat and Maharashtra.	*Zone* III	Meerut, Muzaffarnagar and Bulandshahar districts of West Uttar Pradesh, Punjab, Rajasthan and Madhya Pradesh.
Zone IV	Andhra Pradesh, Madras and Mysore.	*Zone* IV	Central and West Uttar Pradesh (except Meerut, Muzaffarnagar and Bulandshahar districts.)
		Zone V	East Uttar Pradesh, Bihar and West Bengal.
		Assam	to be treated as Zone by itself.

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8.12. Apart from the cost of finance which also, for historical and other reasons, vary from unit to unit the other main factors which affect the cost of sugar production are, duration of cane-crushing season, recovery of sugar from cane, size of the unit and the efficiency of the milling and refining plants. The supply of cane and its quality as also period differ from area to area. Climatic factors are usually common for units in close proximity to each other but not so when factories are widely dispersed. In one district of Uttar Pradesh, there are as many as 14 factories and in another in Maharahstra 12, while some whole States, for example Assam, West Bengal and Pondicherry, have only one working unit each. Haryana, Rajasthan, Kerala, Madhya Pradesh, Gujarat, Orissa and Punjab have between 2 and 5 units each. Of the 200 working factories in India, as many as 175 are situated in the States of Uttar Pradesh (71), Maharashtra (34), Bihar (27), Andhra Pradesh (19), Tamil Nadu (15) and Mysore (9). The size of the unit also affects the economy of milling and refining processes. Generally speaking, many of the units set up before the last World War are of small size while units which have been installed in recent years are somewhat much larger. Normally, the size of the units as established has no relation to regional or climatic condition but appears to be purely a coincidence that certain areas generally have units of smaller and certain others of larger size.

8.13. The existing price schedules determined on the basis of five zones result in practice in enlarging the extent of regional disparity. We have examined the degree of disparity as between the cost of production based on the cost schedules now in force for each of the existing zones and have observed that the range of variation for the years 1966-67 and 1967-68 as between the highest and the lowest cost units expressed as the percentage of the cost of production of the lowest cost unit was as follows:

Zone	1966-67	1967-68
I	27·5	38·0
II	72·4	45·6
III	26·8	34·8
IV	17·5	23·5
V	49·9	35·1

8.14. The cost analysis undertaken by us has also revealed substantial differences as between conversion costs, or even total costs (inclusive of cost of cane) as between factories located even within the same district. We recognise that any system of averaging tends to favour the unit or group of units, howsoever these are grouped, with lower cost as compared to those with higher cost. *There was thus understandably a demand for the formation of larger zones on behalf of the low cost units and for smaller ones by the others. It appears to us that a logical method of stratification could be by grouping together individual units having homogeneity in costs* (involving as it does *inter alia* factors such as duration, recovery, capacity as well as regularities of supply and the price of cane) *irrespective of their geographical location.* On the other hand, it has been argued with some force that since *availability and quality as also price of cane are major determinants of costs, geography which upto a point establishes agronomic conditions* *cannot also be ignored*, especially when we have necessarily to project the cost structure into the future. *Taking all these somewhat conflicting view points into account, we have come to the conclusion that on the whole the practical course to follow would be to substantially increase the number of price-zones so as to reduce though not eliminate inter-se anomalies in the cost structure without resorting to the extremes of the fixation of price for each unit or a single or at the most, two prices one for the sub-tropical and the other for the tropical one.* It is our hope, however, that, *in course of time conditions would be created making the operation of the second alternative feasible. But with the cost differences as they exist today, there seems little practical alternative except further sub-division instead of consolidation of the existing zonal structure.*

8.15. In coming to this conclusion we have very carefully compared the actual costs of conversion of the costed units adjusted for recovery and duration for a period of five years, as also the average cost at which cane was purchased by them. *Keeping these factors in view and extrapolating the results of this sample analysis, we have decided to constitute units in each State into one group, except where this would have led to greater anomalies when applied to States like Uttar Pradesh and Bihar* which have a large number of units situated in areas which are climatically dissimilar.

8.16. In Uttar Pradesh a large number of sugar factories happen to be concentrated in a few widely separated areas. In Meerut Division of Western U. P. there are as many as 19 and in the Gorakhpur Division 23 sugar factories. The climatic conditions of the two areas which are separated by about 300 miles are different. The units in Central U. P. have also for the same reason to be constituted into a separate group. For similar reasons the units in Bihar have been sub-divided into two zones, North and South. In the case of the States of Assam, Bengal, Orissa and Kerala there are only a small number of units in each State and the costs are more or less similar. A common schedule applicable to each of these States has therefore been prepared. Pondicherry has only one unit and it has been grouped with Tamil Nadu. Details of the regional grouping for the purposes of the preparation of cost schedules are given below :

TABLE 8.1

Regional group for cost schedules

Regional	State	District	No. of working factories	Installed capacity (Tonnes)	No. of units costed	Capacity of costed units (Tonnes)
1	2	3	4	5	6	7
1.	Punjab .	Sangrur . .	1			
		Kapurthala . .	1			
		Jullundar . .	1			
		Gurdaspur . .	1			
		Rupar . .	1			
			5	5,537	2	2,032

1	2	3	4	5	6	7
2.	Haryana .	Ambala . .	1			
		Rohtak . .	1			
		Karnal . .	1			
			3	6,900	1	1,500
3.	Rajasthan .	Udaipur . .	1			
		Ganganagar .	1			
			2	2,032	1	1,016
4.	West U.P. .	Meerut . .	8			
		Muzaffarnagar .	4			
		Saharanpur . .	5			
		Dehradun . .	1			
		Bulandshahar .	1			
			19	35,394	5	10,540
5.	Central U.P.	Bijnor . .	3			
		Moradabad . .	2			
		Rampur . .	1			
		Bareilly . .	2			
		Shahjahanpur .	1			
		Nainital . .	2			
		Pilibhit . .	2			
		Etah . . .	1			
		Kheri . . .	2			
		Sitapur . . .	3			
		Hardoi . . .	1			
			20	38,537	8	15,557
6.	East U.P. .	Bahraich . .	1			
		Barabanki . .	2			
		Gonda . . .	4			
		Basti . . .	4			
		Gorakhpur . .	5			
		Deoria . . .	14			
		Jaunpur . .	1			
		Faizabad . .	1			
			32	38,826	10	14,043
7.	North Bihar .	Champaran . .	9			
		Muzafferpur . .	3			
		Darbhanga . .	5			
		Saran . . .	8			
			25	35,282	8	10,134

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1	2	3	4	5	6	7
8.	South Bihar	Gaya	1			
		Patna	1			
		Shahabad	..			
			2	1,725	1	1,219
9.	Gujarat	Junagarh	1			
		Surat	2			
		Amreli	1			
			4	5,056	1	1,016
10.	Madhya Pradesh	Ujjain	..			
		Gwalior	1			
		Ratlam	1			
		Sehore	1			
		Mandsaur	..			
			3	3,536	1	1,250
11.	Maharashtra	Nasik	3			
		Sangli	1			
		Ahmednagar	12			
		Poona				
		Sholapur				
		Satara				
	..	Kolhapur				
		Usmanabad				
	..	Aurangabad	1			
			34	47,289	11	16,005
12.	Mysore	Belgaum	2			
		Raichur	1			
		Bellary	2			
		Shimoga				
		Mandya	2			
		Kolar	1			
			9	14,306	3	5,000
13.	Andhra Pradesh	Srikakulam	4			
		Visakhapatnam	3			
		Godavari	7			
		Krishna	2			
		Nizamabad	2*			
		Chittur	1			
			19	30,018	7	12,732

*Nizam I & II are taken as one.

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1	2	3	4	5	6	7
14.	Tamil Nadu	Tiruchinapalli	3			
		S. Arcot	4			
		N. Arcot	1			
		Madurai	2			
		Tanjor	1			
		Coimbatore	2			
		Salem	1			
		Chingleput	1			
			15			
	Pondicherry	Pondicherry	1			
		Total No. factories	16	21,588	5	6,989
15.	Orissa	Koraput	1			
		Ganjam	1			
				1,829	1	1,219
	Assam	Sibsagar	1	813	1	813
	Kerala	Quilon	1			
		Allepey	1			
		Palghat	1			
				2,540	1	508
	Bengal	Nadia	1	1,219	..	2,540
			7	6,401	..	2,540
		GRAND TOTAL	200		67	1,01,573

CHAPTER 9

COST STRUCTURE AND PRICE FIXATION

9.1. **Selection of units for cost study.**—As stated earlier in paragraph 1.3.2, 68 out of the 200 working units in the Industry were selected for a detailed cost study. A detailed set of cost forms as given in Appendix 31 was sent to all the units in the Industry for submission of the requisite data pertaining to 1966-67. Out of these one unit did not furnish any data (Sasa Musa in Bihar) and had therefore to be omitted. Another unit (Amadalavalasa in Andhra Pradesh) presented abnormalities and since its balance sheet was also not available, it had to be deleted in the preparation of cost schedules. The result of our findings are therefore based on the remaining 66 costed units. The list of units costed with the figures of their registered/licensed capacities, actual quantities of cane crushed, season days, sugar yield etc. is given in Appendix 32.

9.1.1. On scrutiny of the cost forms it was found that the information furnished by most of the non-costed units was not satisfactory. The defects noticed were in regard to allocation of costs under various heads and inclusion of certain items which should ordinarily constitute part of the return. Our Cost Accounts Officers made a detailed scrutiny of the accounts in the selected units and worked out costs in a fair and equitable manner to enable us to determine appropriate costs for each unit on a uniform basis for the preparation of cost schedules.

9.2. **Capacity.**—The following table giving a summarised version of the number of units in each capacity range, the average installed crushing capacity per day as reported to us for the costed and the total units shows that the capacity range selected for costing purpose closely corresponds to the all-India average under each of the three groups. Hence any costs worked out for these ranges should normally be representative of the Industry as a whole.

TABLE 9.1

Number of units and average capacity of the costed units and total units

Capacity	Costed Units			Total Units		
	Nos.	Average capacity		Nos.	Average capacity	
		Tonnes	%		Tonnes	%
(i) Below 1000 tonnes .	5	776	4	24	763	6
(ii) 1000/1999 tonnes .	50	1322	64	145	1302	65
(iii) 2000 tonnes and over .	12	2703	32	31	2702	29
Total/Average .	67	1529	100	200	1455	100
Total Capacity (Tonnes) (All Units) .		1,02,419			2,90,917	

9.2.1. The following table exhibits the total number of sugar units Statewise in the country and those selected for cost study which have been working as companies or co-operative societies.

TABLE 9.2

Statewise number of sugar factories and those costed

State	Total units in the State	Units selected for cost study		
		Companies	Co-operative Societies	Total selected
	Nos.	Nos.	Nos.	Nos.
(a) Maharashtra	33	4	7	11
(b) Uttar Pradesh (West) . .	39	12	1	13
(c) Uttar Pradesh (East) . .	32	10	..	10
(d) Bihar	29	9	..	9
(e) Andhra Pradesh . . .	19*	5	2	7
(f) Tamil Nadu & Pondicherry .	16	3	2	5
(g) Mysore	8	2	1	3
(h) Punjab	5	1	1	2
(i) Gujarat	3	..	1	1
(j) Orissa	2	..	1	1
(k) Haryana	3	..	1	1
(l) Madhya Pradesh . . .	4	1	..	1
(m) Rajasthan	2	1	..	1
(n) Assam	1	..	1	1
(o) Kerala	3	1	..	1
(p) West Bengal	1	..	..	..
TOTAL .	200	49	18	67
	(100%)	(24·5%)	(9.0%)	(33·5%)
		(73·1%)	(26·9%)	(100%)

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*Nizam I and II are taken as one unit.

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9.3. **Cost of production.**—The Statewise total cost of production of the 67 costed units together with other details is given in the following table (break-up of total cost is shown in Appendix 33).

TABLE 9.3

Average cost of production by States

States	No. of units	Installed average capacity per day	Cane crushed per day (24 hours)	Average yield of sugar	Total factory cost per quintal
		Tonnes	Tonnes	%	Rs.
(a) Maharashtra	11	1455	1331	11·30	89·40
(b) Andhra Pradesh . .	7	1812	1233	8·70	103·07
(c) Mysore	3	1667	1058	11·27	88·63
(d) Tamil Nadu . . .	5	1398	1011	8·92	97·83
(e) Kerala	1	508	869	7·77	104·20
(f) U.P. (East) . . .	10	1404	1148	9·94	94·18
(g) U.P. (West) . . .	13	2007	1606	9·48	101·03
(h) Bihar	9	1380	1101	9·88	96·57
(i) Gujarat	1	1016	594	9·24	100·10
(j) Orissa	1	1219	878	8·65	110·38
(k) Punjab	2	1016	1022	8·14	105·90
(l) Haryana	1	1500	1152	8·04	104·43
(m) Madhya Pradesh . .	1	1250	695	9·16	171·70
(n) Rajasthan	1	845	858	9·85	128·15
(o) Assam	1	813	893	9·30	103·61
Total/Weighted average .	67	1529	1236	10·03	96·20

9.3.1. The method adopted and the ingredients taken into account by Government in the fixation of sugar prices are noted earlier in para 7·8. The total factory costs summarised in the above table take into account the actual price paid for sugar-cane which was often for various reasons in excess of those fixed by the Government, harvesting charges where incurred, transport, handling and development expenses, cess/purchase tax and factory conversion charges which include salaries/wages, power, fuel and stores, repairs and maintenance, depreciation, packing and other overheads, after adjusting for credits. Selling expenses have not been included as these are being dealt with separately.

9.3.2. The actual costs worked out for the various costed units represent the average costs of sugar produced covering all grades. The factories in different States have different durations and crushing days depending solely on the availability of sugarcane in adequate quantities. The recoveries of sugar from cane also vary considerably. On the whole, the capacities also vary from factory to factory. Hence any attempt to make a direct comparison of actual costs between factories or between States would lead to unrealistic results. Any worthwhile comparison of actual costs is only possible by reducing the various varying factors in terms of a common measure.

9.4. **Comparison of costs on uniform basis.**—The following principle has been adopted in determining the comparable costs on a uniform basis for the 66 costed unis. For each factory the quantity of cane crushed would vary directly with the number of crushing hours. All conversion costs other than packing charges are inversely proportionate to the recovery. Apart from the cost of cane and its directly related charges, the major items of expenses that is, the salaries/wages of staff expenses would be the same irrespective of the recovery percentage of sugar from cane. Hence when recovery is higher and more sugar is produced, the incidence of expenses would be arrived at by dividing the total by a larger quantity of sugar and the result would be a lower figure than if the recovery was low and less sugar was produced. Although for purposes of *inter se* comparison on an all-India basis it would be in order if the cost schedules are prepared on the basis of say 10 per cent recovery and 120 crushing days (based on 22 hours per day) ; *yet having regard to the State-to-State variations and season-to-season fluctuations we consider that it would be more realistic to recast these schedules for price fixation purposes, taking actual five years' average recovery and duration of a region as their base.* We have adopted this basis for our working. Having made this correction *we consider that no further adjustments are called for either for the capacity operated or for the utilisation of operating hours as these are mainly dependent on the availability of cane and thus largely beyond the control of the factories.* The main elements of conversion charges and their variation in regard to crushing hours and recovery are discussed below.

9.4.1. **Power and fuel—Season and off-season.**—Ordinarily the power and fuel requirements of a factory are met by baggasse obtained from cane. Power is required during off-season for purposes of repairs and maintenance, office, staff quarters, etc. As the season days increase, the off-season decreases. Therefore the requirement of power and fuel for off-season would vary more or less directly with the length of the off-season.

9.4.2. **Chemicals and filter cloth.**—The consumption of chemicals and filter cloth would vary directly with the total crushing hours.

9.4.3. **Salaries and wages.**—Seasonal staff is employed just a few days before the date of the starting of the crushing season and is discharged when the crushing of cane is stopped. The total amount incurred on seasonal staff including the retainer allowance would obviously vary directly with the length of the season. The salaries paid to staff employed throughout the year would remain unaffected by the length of the season.

9.4.4. **Repairs and consumable stores.**—These are being dealt with together as it has not been possible to segregate the two categories of expenses completely in each case in view of several hundreds of items included therein. In the cost analysis, the major items of consumable stores have been segregated and shown separately and this would vary with the duration of the crushing hours. Certain consumable and repair stores are in the nature of semi-variables which may not directly vary with the length of the crushing hours but it has not been possible to segregate these from the fixed items. Repairs to buildings and other general assets are in the nature of fixed charges irrespective of the duration of crushing hours. Only repairs and maintenance would therefore require an adjustment for variation in crushing hours. Repairs are carried out during the off-season but in certain cases this may spill over to the next year also. In order to have a reasonable assessment, we have analysed cost under this item for a period of three years and adopted the average rates standardised to working season. Seventy per cent of these expenses has been taken as fixed and the remaining thirty per cent as variable.

9.4.5. **Overheads.**—Barring items like cost of insurance on sugar, travelling for purchase of cane and wagon procurement expenses, which would vary with the quantity of sugar produced and despatched, the other items of overheads of a factory would in general be independent of duration. Staff amenities such as medical facilities are also likely to be higher if the season is prolonged. After taking these factors into account, 25 per cent of the expenses under this head have been taken as variable and the balance 75 per cent as a fixed charge.

9.4.6. **Depreciation.**—The total depreciation calculated include shift allowance on plant and machinery as per income-tax rates. The shift allowances have been treated as variable while the normal allowances covering all assets being an annual charge has been treated as a fixed expenditure irrespective of the duration of the season. Government have recently taken up the issue of revising the existing rates of depreciation under the income-tax rules and also the period for shift allowances. When the amended provisions come into force, the depreciation element would undergo a certain change.

9.4.7. **Packing.**—Packing charges would obviously vary with the quantity of sugar produced and packed.

9.5.1. **Duration of Season.**—The data collected shows that the actual crushing season (based on 22 hours per day) for the individual unit had a wide divergence ranging from as low as 26 days to as high as 195 days. Statewise averages indicated a range from 26 to 153 days whilst the All-India weighted average comes to 108 days for the costed units.

9.5.2. **Cane crushed.**—The total cane crushed by the costed units aggregated to about 8·052 million tonnes or about 1·202 lakh tonnes per unit during the 1966-67 season. As stated earlier, the capacity utilisation fluctuated from State to State and this depended mainly on the availability of cane in adequate quantities and, to some extent, on other factors, like electrical and mechanical breakdowns.

9.5.3. **Sugar Yield.**—The average recovery of the costed units worked out to 10·03 per cent the sugar produced being 0·808 million tonnes out of the cane crushed aggregating to 8·052 million tonnes. The recoveries ranged from as low as 7·77 per cent to 12·14 per cent in the individual units and the average for the different States varied from 7·77 per cent to 11·30 per cent. The costed units in Mysore and Maharashtra have generally shown a higher level of performance, the yield being over 10·50 per cent whilst the lowest recoveries were noticed in two units one each in Kerala and Punjab.

9.6. **Break up of actual costs.**—A break up of the various elements representing the weighted average costs of all grades of sugar for the costed units is as under:—

TABLE 9.4

Items/Break up of cost elements	Cost per quintal of sugar	Composition
	Rs.	%
(A) *Cane & Related Costs*—		
(i) Cost of cane (including transport & harvesting)	63·86	66·4
(ii) Cess/Purchase tax	4·92	5·1
TOTAL (A)	68·78	71·5
(B) *Conversion Charges*—		
(a) Cane development expenses at cane centres	1·29	1·3
(b) Salaries & Wages	10·18	10·6
(c) Power, Fuel, & Stores	2·59	2·7
(d) Repairs & Maintenance	3·29	3·4
(e) Other overheads	2·60	2·7
(f) Depreciation	5·41	5·6
(g) Packing	2·64	2·8
TOTAL (B)	28·00	29·1
(C) Total (A + B)	96·78	100·6
(D) Less Credits for recoveries	0·58	0·6
TOTAL COST	96·20	100·0

9.7. **Cost Schedules.**—Having regard to the wide disparity in duration of cane crushing and recoveries of sugar, the costs were initially reduced to a standard duration of 120 days (of 22 hours each) with a uniform recovery of 10 per cent so as to have a proper *inter se* comparison of costs as between units in a zone. In preparing the cost schedules the differential relating to other grades of sugar was adjusted and a common schedule for '*D*-29 *grade*' evolved. The Statewise conversion charges per quintal thus arrived at are given below. These exclude transport costs on cane, selling expenses and return which are dealt with separately:—

TABLE 9·5

Statewise conversion charges

States/Zones	Conversion charges per quintal	
	Including depreciation	Excluding depreciation
	Rs.	Rs.
(a) Maharashtra	26·74	19·40
(b) U.P.—East	25·15	22·41
West	24·87	21·98
Central	23·33	19·49
(c) Bihar—North	24·96	22·48
South	30·57	29·45
(d) Mysore	27·19	21·60
(e) Tamil Nadu	27·82	18·73
(f) Andhra Pradesh	22·85	17·10
(g) Punjab	21·74	17·98
(h) Haryana	19·58	15·53
(i) Rajasthan	29·98	27·83
(j) Gujarat	22·90	15·16
(k) Orissa	27·03	12·39
(l) Madhya Pradesh	40·92	36·18
(m) Kerala	23·91	22·58
(n) Assam	26·83	21·53
WEIGHTED AVERAGE	25·20	20·45

9.7.1. The costs of conversion in South Bihar, Rajasthan and Madhya Pradesh are abnormally high owing to lack of availability of cane and consequent under-utilisation of capacity. As for the rest, the variations from the mean are within reasonable limits. It will also be noticed that in many states a number of new plants have been either recently installed or several old ones expanded or modernised resulting in higher levels of average depreciation.

9.7.2. Details of Statewise conversion costs are brought together in Appendix 34. It would appear that by and large salaries and wages constitute the principal element of conversion charges, followed by stores and repairs, depreciation, packing charges and other miscellaneous items in that order.

9.7.3. The disparities noticed as between States in the different cost elements barring packing and grade differentials are, as stated earlier, mainly due to the different crushing capacities, average capacities utilised depending on the availability of cane during the season and the shut down periods. These factors have a direct relation on the fixed elements of costs. The costs relating to packing and grade differentials are constant irrespective of variation in recoveries or duration of season days. Marginal variations in respect of packing are due to freight and handling charges for different destinations. The variations in grade differentials are on account of the different grades of sugar produced by various factories in each State and are related to differentials fixed by Government. The credits for recoveries are on the sale of molasses and press mud and are in the nature of a variable charge related to the changes in the recovery of sugar.

9.8. **Estimate of future conversion charges.**—Having first computed the conversion charges for all the States on a uniform basis of ten per cent recovery and 120 days duration (based on 22 hours per day), the average recovery and duration for each of the States were worked out for the years from 1963-64 to 1967-68. The estimates of costs for the next three years 1969-70 to 1971-72 were then projected in the following manner.

9.8.1. **Salaries and wages.**—According to the Wage Board award in 1960, grade increments have been provided on the basis of one rupee per man per month for the minimum rated worker and higher amounts for the other categories namely semi-skilled, skilled highly skilled, clerical and supervisory. Taking into account the composition of basic wage in the overall staff structure of the costed period, the impact of grade increments has been computed after adjusting for retainer allowances during the off season. This works out to about 1·25 per cent per annum. The dearness allowance structure takes into account a basic index figure in 1960 of 123 points linked to the all-India cost of living index for the working class. For each unit in the index figure the dearness allowance has to be varied by 55 paise per worker per month for those drawing upto Rs. 100 per month and

65 paise for those paid above this level. In 1966-67 the dearness allowance payments were made on an index figure of 174 (average of the monthly indices for 12 months ending June 1966). This index has been brought to the current level which is 214 (average of the indices ending June 1969). The variation is thus of 40 points. The impact of dearness allowance variations in bringing the costs to the current level worked out to 15·6 per cent, 17·5 per cent, 15·6 per cent and 15·1 per cent on the total wages for North, Central, South and Western regions respectively. The scale of retirement of personnel in the different units have been suitably adjusted in computing the additional cost under this item.

9.8.2. **Stores and repairs.**—In view of the varied nature of the stores consumed and the innumerable items of repair materials, it is difficult to assess the quantum of variation for each individual item. However certain items of a consumable nature such as power and fuel, limestone/lime, filter cloth, lubricants, chemicals and sulphur could be separately assessed. In assessing the quantum of variations we have been guided by the classification in the Index number of wholesale prices in India—revised series published by Economic Adviser to the Ministry of Industrial Development and Company Affairs, Government of India. The average variation in respect of items under repairs stores and spare parts worked out to about 9 per cent after taking into account the fall in sulphur prices. For future the same incidence of increase of 3 per cent per annum has been taken into account.

9.8.3. **Packing.**—The industry has made a claim of Re. 0·62 per quintal for increased packing costs. The price variation 1966-67 till May 1969 was of the order of about 15·6 per cent based on price index for Jute given in the Government publication of wholesale prices referred to in the preceding paragraph. The jute market shows wide variation in the prices from time to time. Of late there has been a marked fall in the prices of gunnies which shows a variation of about 12 paise per gunny over 1966-67. This downward trend has been recognised in our estimates as also the freight elements for different destinations.

9.8.4. **Overheads.**—Certain items such as printing, stationery, postage and telegrams have gone up due to increased costs and higher rates fixed by Government. A suitable increase has been allowed in the labour welfare expenditure also. These variations have together amounted to 0·2 per cent of cost.

9.8.5. **Bonus and managing agency charges.**—As under the Bonus Act a minimum bonus at 4 per cent is statutorily payable we have decided to include this item in the cost structure. According to the Government's decision managing agencies would be dispensed with from the next year. However, the managerial expenses incurred in lieu of managing agency charges would be permitted to be included in the organisation's expenses based on certain criteria. We have made suitable provision for this in the cost structure.

9.8.6. **Selling expenses.**—In computing selling expenses we have taken into account the transport charges on sugar to railway stations and loading and handling charges incurred by the factories. We have adopted the actual for 1966-67 in the estimates for future as the incidence of these charges vary marginally. For most of the States this elements of cost is of the order of 15 paise per quintal. The selling commission has not been included under this head as this is to be met out of the margin of return.

9.8.7. **Grade differentials.**—Our cost schedules indicates only the fair ex-works costs for "D 29" grade sugar and other grades have differentials over this as per Government notifications. Such differentials for superior and inferior varieties have been related to the pattern of production of each region and adjusted to the overall costs to arrive at the cost of D-29 grade. Besides this, we have also taken into account a differential of Rs. 3·70 per quintal for raw sugar based on the data of some specific units as complete detailed break-up of cost for the production of raw sugar have not been properly maintained by most of the units.

9.9. Depreciation:

9.9.1. Under the terms of reference we have been asked to indicate the basis on which the provision of depreciation should be made whether depreciation to be allowed in the cost structure should be calculated on replacement value or on the written down values of the assets and how individual factories which modernise their plant or expand their capacities should be compensated for the investment made. The industry has in addition raised a few other issues such as those of allowing additional depreciation as compensation for inadequacy of the amounts allowed in the past as well as the adoption of a standard block for purposes of its calculation.

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9.9.2. The State Government of Uttar Pradesh has suggested depreciation at written down values of assets together with development rebate on investments for units which need to be rehabilitated, modernised and expanded on the same basis as for new ones. It has also suggested Governmental assistance in providing finance for rehabilitation. The Governments of Bihar and Tamil Nadu have suggested depreciation on written down value. The Governments of Maharashtra, Haryana and Kerala are in favour of depreciation on replacement value as well as a special provision for rehabilitation. The Government of Madhya Pradesh has advocated depreciation on replacement cost and relief in taxes for expansion of plant. The National Council for Applied Economic Research is of the view that adequate provision should be made for replacement to cover depreciation in order to maintain the capital intact. The Indian Merchants Chamber also favours depreciation on replacement cost particularly on account of the inflationary pressure and obsolescence which occurs in a dynamic economy characterised by changing prices and production techniques. The Sen Commission had recommended depreciation at written down value but had also suggested rehabilitation within a specified period failing which it recommended take over by Government. On the issue of depreciation in general, the Report on Rationalisation and Simplification of Tax Structure by the Committee headed by Shri S. Bhoothalingam came to the conclusion, that over a period of years depreciation should be allowed in such a way that 20 per cent more than the original cost is provided for. The Producers' Associations* have generally favoured, depreciation on replacement value. The Indian Sugar Mills Association has advocated depreciation on the value of a standard block of 1250 tonnes in addition to the individual requirements of uneconomic units. The U. P. Co-operative Factories Federation has asked for depreciation on replacement value for a life period of 16 years. A large number of individual units which responded to our questionnaire have also made strong pleas for computing depreciation on the basis of replacement value.

9.9.3.1. We tried to ascertain the practice followed in other countries. We find that the views generally held in the U.S.A. and the U. K. are that the basis for the assessment of depreciation should be the original cost of an asset. The I. B. C. A. has specifically recommended that any extra amount set aside to take care of changes in the purchasing power of money "should be treated as a transfer to reserve and not a charge in arriving at profits."

9.9.3.2. A U. K. White Paper issued in 1961 had contained the suggestion that the nationalised industries should "(i) balance their receipts and expenditure over an arbitrary five year period, after providing for interest charges, and depreciation at historic cost, and (ii) provide from revenue not only excess depreciation to cover the difference between historic and replacement costs but also premature obsolescence". Full replacement depreciation was first used by the U. K. Postmaster General in his accounts in 1955, and later by the Iron and Steel Board in 1957. Subsequently, the 1961 Government White Paper (C.M.N.D. 1337) on the 'Financial obligations of Nationalised Industries' recommended that all nationalised industries adopt the practice of full replacement value depreciation.

9.9.4. The Commission has in the past made a few departures from its normal practice of allowing depreciation on the written down value adopted for income tax assessment. In the case of Steel Prices Report (1962) the Commission adopted a standard block and straight line method. In the Report on Rubber Tyres and Tubes (1955) special depreciation was allowed in addition to the normal amount.

9.9.5. In the informal discussions we have had with certain well-known economists, the view was expressed that some provision must be made through the price mechanism for the speedy rehabilitation of the weaker units in the industry in the overall public interest. It is in these circumstances not possible to reject out of hand the concept of depreciation funds being meant for replacement and consequently that it should provide for replacement at the prevailing rates. In a comparatively stable economy where the rate of increase is more or less predictable it may be possible to make suitable marginal adjustments for this purpose. But where owing to inflationary or other tendencies the prices tend to rise steeply, it may not be possible either to estimate the amount needed in the future or to make a retrospective calculation for the past.

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*The National Federation of Co-operative Factories, Mysore State Co-operative Sugar Federation, U. P. Co-operative Factories Federation, Gujarat Rajya Sahakari Udyog Sangh, The Bellari Central Co-operative Store Ltd., The South India Sugar Cane Sugar Technologists Association, Indian Sugar Mills Association, East U.P.

9.9.6. The majority of the units in the sugar industry are more than thirty years old. At 9 per cent depreciation for plant and machinery and 2½ per cent for buildings most of the original assets have been written off. To calculate the amount of depreciation that would have accrued to individual units during the course of the last thirty years or so on replacement basis year by year and simultaneously to revalue the asset in order to arrive at the present net assets is not easy. Again, we have adopted the cost of one-third of the units and the final price for the unit in a particular region will be based on the schedule for that region. To arrive at the quantum of revalued net assets for the region which may be considered equitable for the units situated within it is not possible. There is another important consideration too. There was nothing which could stop the units, from computing depreciation at replacement value—notwithstanding that only historical depreciation was allowed for income tax purposes—and setting aside the additional amount as depreciation reserve for being applied to the acquisition of plant and machinery for keeping the assets at the original value and efficiency. Since the maintenance of the original assets is the primary responsibility of the management, the retained profits should have been primarily applied to this purpose and only the balance for payment of dividends. This has not been done in the past.

9.9.7. A study of the depreciation element in the several units based on a uniform recovery of 10 per cent and 120 days duration for the year 1966-67 has shown that this element has varied from a very low figure of Re. 0·96 to as high a figure as that of Rs. 14·64 per quintal of sugar, the weighted average for all the units being Rs. 4·75 per quintal of sugar. Out of the total costed units, 42 units (*i.e.* 64 per cent) have depreciation much lower than the average of the country. U. P., Bihar, Punjab, Haryana, Rajasthan and Kerala alone covered 34 units. *This establishes the fact that, comparatively speaking, a large number of units require rehabilitation having depreciation much lower than to average of the Industry.*

9.9.8. Our exercise is a limited one for a period of three years and it would not be advisable to work out depreciation at replacement value for this short period only when this practice has not been followed in the past; nor is there any assurance that it will be adopted in the future. Another contra-indication is the variance of such bases of computation with those of income tax assessment. We realise that the Industry has been under price control for the last 27 years and that it did not have the option to frame its own cost structure. Nevertheless, it could have if it was conscious of the replacement principles of depreciation, framed its balance sheets and profit and loss accounts on the same principles and allowed only the residue to be paid towards dividend or to be applied for expansion. In any case, it would not be correct to work out the difference between the historically worked out written down value and the replacement value of similar assets without simultaneously seeking to revalue the old assets. The industry might have had a better case for such a claim if its component units and also revalued their assets and allowed for depreciation to the extent so needed and not only confined themselves to the amounts permissible under the income tax rules.

9.9.9.1. While recognising that there may be a case for rehabilitation of the Industry, we do not find it practicable or feasible to modify the basis for calculation of depreciation. We have also noted that certain additional funds have been generated within the Industry (though not necessarily in proportion to the requirements of each unit because of their relative cost disparities *inter se* in the last two years because of the policy of partial decontrol. Further we are aware that Government have recently published certain draft rules seeking to liberalise the depreciation allowance to be earned, for income-tax purposes, by this among the industries. These when finalised would provide some relief.

9.9.9.2, Taking all this into account and having regard to (i) the wide repercussions which any departure from the normal rule is likely to have, and (ii) the need for keeping the price of sugar, as low as practicable, not only in the interest of the consumer but also enable the Industry itself to promote the consumption of sugar and thus incidentally secure for itself a better utilisation of capacity, an improvement in the capital/turnover ratio and consequently its profitability, *we have decided in favour of continuing the existing method of computing the quantum of depreciation on the basis of zonal averages of the costed units. The figures so adopted would automatically undergo an upward revision if and when the revision contemplated by the draft rules are brought into effect.*

9.9.10. Under the terms of reference Government has asked for our views on how individual factories which modernise or expand their capacities would be compensated. It has already been mentioned that the cost schedules have been worked out on a regional basis. Consequently these apply for each unit in the region irrespective of the fact whether the units are new or old. Generally all the regions have a fair mixture of old as well as new units. New units or units which have modernised, have low cost and higher retained profits after payment of dividend. Where expansion of capacity has occurred at the cost of renovation of plant and machinery the unit may not be in as advantageous a position. For expansion in such cases is not likely to reduce the cost. *We have elsewhere already suggested that there is no justification for expansion except through new capital or additional profits generated from within.*

9.10. **Rehabilitation :**

9.10.1. An industry or the component unit of one may need rehabilitation on account of obsolescence or for modernisation in an economic climate where enough funds have not been generated for effecting the necessary improvements. It is also possible that even when there were no external forces which may have regulated the profitability of an industry imprudence by way of distribution of liberal dividends, undue expansion and outside investments may have brought about a situation where the industry may not be able to pull its weight by using its own resources for maintaining viability. Where the retained profits have been used for investment outside the industry there would be no case for a claim for rehabilitation by passing on the burden to the consumer since the deprivation to which the unit was subjected was deliberate. Improvidence by way of liberal distribution of dividends and expansion could possibly be overlooked where national interest required that the industry must survive. It has been argued that this situation has arisen, since the industry has been hindered because of control over an extensive period from generating enough funds. In the existing state of affairs the uneconomic units are not likely to attract any capital. But if funds for servicing of loan capital are assured they may again become credit worthy.

9.10.2. The case for rehabilitation is further fostered by the fact that profitability was restricted over a period of 27 years. In the case of two other industries viz., Steel and Cement, which also have been under price control for a long time the need for grant of rehabilitation was recognized by the Commission. The Committee on Rehabilitation and Modernisation of Sugar Factories in India (generally known as Gundu Rao Committee) had recommended that a Sugar Industry Development Fund should be created and it may be utilised for reimbursement to factories for rehabilitation and modernisation under the supervision of Government. For this purpose a fund of Rs. 25 crores to be collected over a period of five years, was contemplated. The Sen Commission had also suggested the rehabilitation of uneconomic units. The Industry has pressed for the grant of rehabilitation equivalent to the amount of difference between the replacement value and the historical depreciation. Since the Industry was under control for almost three decades there is force in the plea that it could not generate enough funds to rehabilitate itself in the past. It has been represented to us that for an average unit of 1250 tonnes the capital cost today is about Rs. 202 lakhs which would give a depreciation rate of Rs. 6·32 per quintal adopting plant and machinery life of 22 years and other assets as 30 years of life and the duration of 120 days with recovery of 10 per cent. The all-India average depreciation for the period of the estimates works out to Rs. 2·80 per quintal of sugar for the costed units. The difference is Rs. 3·52 per quintal, which when grossed up for taxation, would call for an amount of Rs. 7·82 per quintal. After allowing for development rebate of Rs. 1·12 it would work out to Rs. 6·70 per quintal of sugar and deducting from this interest amounting to Rs. 2·48, the balance comes to Rs. 4·22.

9.10.3. We have given considerable thought to the problem and consider, that *rehabilitation should not be linked to the replacement cost or the difference between depreciation at replacement and historical cost. Nevertheless, it is necessary to ensure that in the interest of the maintenance of continuity of sugar production at an appropriate level such of the units which can be brought to a standard of normal efficiency should be helped to rehabilitate themselves. Units which cannot be thus improved may have to be scrapped.* In a system of pricing by regions as well as the fixation of prices on the basis of schedules it is not possible to take into consideration the needs of individual units and the best that can be done is to provide for a joint fund for the entire Industry.

9.10.4. *We are of the view, therefore, that there is a case for allowing for the next three to five years at least half this amount or Rs. 2 per quintal (in round figures) by way of a rehabilitation grant to this Industry at this juncture either by way of a direct addition to the controlled price or if so preferred in the interest of the consumer indirectly, by suitable downward adjustment in the burden of taxation on this particular industry or commodity. If this suggestion is accepted we would further strongly recommend that the amounts so generated should be separately funded to be utilised under close supervision only for the purpose for which it is meant viz., for meeting the costs including the cost of finance for the creation of additional assets to improve the productive efficiency of the deserving units wherever these might be situated. For administering this fund we would suggest the setting up of a Board consisting of a representative each of the Central Government, the industry and the National Sugar Institute in order to ensure by constant supervision that the funds are applied entirely for the renovation of plant and machinery.*

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9.10.5. We are conscious of the fact that this total sum per annum so provided will not by itself suffice in adequately meeting the capital expenditure required even in a phased manner by quite a number of existing units. What we visualise however, is (a) that the actua capital requirement would be partly generated by raising of fresh equit capital for which we are providing some margin by shape of additiona return as well as by borrowings. Grants and/or loans out of thi fund are intended mainly to meet the cost of these additional borrowings for creating these new assets particularly during the period whic it takes for such additional investment to become fully productive.

9.11. **Return :**

9.11.1. The Industry has claimed a margin of return of the order of 19·9 per cent on capital employed. This alone in their opinion would enable the units to declare a net return after taxation of 10 per cent on net worth.

9.11.2. Our cost analysis of actuals for 1966/67 shows that the written down value of net block (excluding a couple of units which have been leased out) ranges from Rs. 8·71 to Rs. 129·89 per quintal of sugar on the basis of standard recovery of 10 per cent and duration of 120 days of 22 hours per day. Even, as between the States on an average, this variation ranges from Rs. 17·37 to Rs. 124·37 per quintal of sugar. Any calculation of a return of a uniform percentage on the basis of these widely ranging elements of capital costs would tend to vary this portion of the return margin very substantially. This tendency will be further aggravated by the variations in the duration and recovery as between each unit or State. The preponderance, 43 of out of 67 (or 65 per cent), of low block units in our sample has tended to lower the national average to Rs. 40·59 per quintal. The adoption of the conventional method of expressing the return as a uniform percentage of the capital employed taking these zonal averages of the written down value of the net **fixed** assets and the value at a computed level of stock for the purposes of calculating the requirements of working capital, is bound to result in substantial inequalities between unit to unit and Zone to Zone by way of the amount to be added to other costs for purposes of return. Unless the percentage was fixed at a very high level such an amount would prove inadequate for the true requirements of the more recent relatively high capital cost but otherwise efficient units. To do so would moreover, confer an unwarranted benefit to the large majority of relatively low cost ones. As we have stated earlier owing to the increase in demand for sugar, the Industry as a whole stands not only in need for substantial rehabilitation and modernisation of the older units but also expansion of capacity by attracting fresh investment for setting up of new units or a major expansion of already installed capacities. As the Reserve Bank of India's industry-wise study of the financial results of 1333 companies for the period 1960-61 to 1965-66 has brought out the profit percentages of the sugar companies were among the lowest of all the units. In fact this analysis has shown that the profitability of this Industry was lower than the average of all industries for four out of the six years covered by the Bank study and for the other two years it was only marginally higher than the all industry average by only 0·2 per cent. Stock-exchange figures also indicate that investors are shy of sugar shares presumably because of its low profitability. *It is our view therefore, that the present requirements of this particular Industry can be more equitably met only by a departure from our conventional method and by adopting instead, a uniform amount per quintal as the margin to be added to the other costs in arriving at the fair price of sugar.* After closely studying the matter in all its aspects *we have come to the conclusion that Rs.* 10·50 *per quintal would be a fair amount to be so added.* According to our calculations this should provide a relatively recent and efficient unit an amount sufficient to declare a dividend of the order of 7 to 8 per cent on paid up share capital after meeting its other commitments such as interest and taxation. In arriving at this judgement we had made proforma calculations for return applying 12½ per cent to the zonal averages of capital employed and the results are tabulated in Appendix 37. It will be noticed therefrom that the variation ranged from Rs. 8·23 to Rs. 15·73 per quintal. Adding to this the element of depreciation, the overall difference on account of these two components ranged from Rs. 10·01 to Rs. 21·96. By adopting the standardised figure of Rs. 10·50 per quintal (as indicated in col. 5 of that statement), the range of variations has been narrowed down from Rs. 11·88 to Rs. 16·94. This we consider a more satisfactory alternative not only from the producer's but also consumer's point of view as well. It will be in the areas where a large number of low cost units subsist that this amount of return available in terms of money per unit of sugar produced will be relatively higher. This should provide the needed impetus for further capital formation for rehabilitation, expansion and modernisation. From the view point of the consumer however, a part of the difference between the standardised figure of return as proposed by us and the one notionally estimated as indicated in col. 3 of this statement is, to a certain extent, neutralised by the lower depreciation element which has also gone into the total cost. The basic cost schedule thus arrived at for the years 1969-70 to 1971-72 is given below in Table 9·6 :—

TABLE 9·6

Ex-works Price of Sugar based on Minimum Price of Cane as Notified by Government and Conversion Charges for 1966/67 adjusted for future based on past 5 years duration and Recovery.

(Per quintal)

Zones	Based on Zonal Average of 5 year s duration & Recovery				
	Cost of cane at Govt. Notified Minimum prices	Conversion charges	Return & Rehabilitation	Total of Cols. (3 & 4)	Ex-Works Price of Sugar (2 plus 5)
1	2	3	4	5	6
	Rs.	Rs.	Rs.	Rs.	Rs.
1. Punjab	91·86	33·80	12·50	46·30	138·16
2. Haryana	89·73	26·46	12·50	38·96	128·69
3. Rajasthan	85·89	50·79	12·50	63·29	149·18
4. West U. P.	89·69	33·34	12·50	45·84	135·53
5. Central U. P.	85·87	27·60	12·50	40·10	125·97
6. East U. P.	84·84	31·64	12·50	44·14	128·98
7. North Bihar	85·14	32·73	12·50	45·23	130·37
8. South Bihar	88·30	53·90	12·50	66·40	154·70
9. Gujarat	84·07	19·43	12·50	31·93	116·00

1	2	3	4	5	6
10. Madhya Pradesh	85·79	72·95	12·50	85·45	171·24
11. Maharashtra	78·29	23·67	12·50	36·17	114·46
12. Mysore	87·13	25·97	12·50	38·47	125·60
13. Andhra Pradesh	84·53	25·85	12·50	38·35	122·88
14. Tamil Nadu & Pondicherry	96·55	26·44	12·50	38·94	135·49
15. (i) Orissa	85·79	39·06	12·50	51·56	137·35
(ii) Assam					
(iii) Kerala					
(iv) West Bengal					

9.12. **Cost schedule based on past 5 years average recovery and average duration for each zone :**

9.12.1. As already discussed in paragraph 9·4 we have adopted for the purposes of estimate of future costs, average duration of period of 5 years from 1963-64 to 1967-68 for each of the Zones and also the average recovery for the same period. Costs have been developed for each of the Zones and the results of the cost have been brought together in Appendix 35 and summarised in Table 9·6.

9.12.2. It would be observed that the bulk of the costs represented by the cost of cane and conversion charges formed 76 per cent and 24 per cent of the total cost. The costs of cane adopted for Table 9·6 have been worked out for each of the Zones in Appendix 36. The conversion charges include also the elements of cost s relating to cane transport expenses, after adjustment for rebate for own and outstation cane. The amount of return has also been added in order to arrive at the ex-works price. The following items will however not be covered by the cost schedules :—

(a) The cost of cane will be fixed by Government each year taking into account the average recovery and the minimum prices with adjustments for variations in recovery at 0·1 per cent over 9·4 per cent.

(b) Cooperative society's commission where leviable will be added to cane cost of each Zone.

(c) Purchase tax/Ievy of cess will be separately added to the cost of cane.

(d) The cost of cane made up of (a), (b) and (c) above will be added for arriving at the total costs of cane per quintal and to this will be added the margin for cane driage and the total cost of cane assessed for each Zone.

(e) The cost of cane arrived at in (d) above will be converted by dividing by the recovery to arrive at the cost of cane per quintal of sugar.

These elements of costs as well as the modifications to be made are expected to be worked out by the authority fixing the fair price for each Zone for a particular year. *The elements of costs shown in schedule* 1 *will form the base for developing conversion charges for varying seasons and recovery. The basic schedule showing the nature of expenses classified under "constants, variables, semi-variables and fixed expenses" are given in Table* 9·7 *with adequate footnotes which can be usefully applied for any duration and recovery.*

TABLE 9·7

Basic Cost Schedule for Conversion Charges for different Zones for future (1969/70—1971/72—3 *years*) *based on the average duration and average recovery of the past* 5 *years* (*viz.* 1963/64 *to* 1967/68).

[Excluding unified Return of Rs. 10·50 and Rehabilitation of Rs. 2.00 per quintal]

(Per quintal of Sugar)

Zones	Duration of season (of 22 hours)	Recovery of sugar	Nature of Expenses in conversion Charges				Total conversion charges (4 to 7)
			Constants	Variables	Semi-variables	Fixed expenses	
1	2	3	4	5	6	7	8
	Days	%	Rs.	Rs.	Rs.	Rs.	Rs.
1. Punjab . .	98	8·46	1·16	13·20	0·81	18·63	33·80
2. Haryana . .	125	8·70	1·65	10·15	1·11	13·55	26·46
3. Rajasthan . .	78	8·67	1·12	32·85	1·26	15·56	50·79
4. West U. P. .	117	8·99	1·67	16·01	1·09	14·57	33·34
5. Central U. P. .	133	9·61	1·67	11·78	0·64	13·51	27·60
6. East U. P. .	115	9·68	1·50	12·09	1·21	16·84	31·64
7. North Bihar .	110	9·58	1·52	13·82	1·20	16·19	32·73
8. South Bihar .	64	9·15	2·65	24·26	4·77	22·22	53·90
9. Gujarat . .	150	10·42	1·85	6·01	0·25	11·32	19·43
10. Madhya Pradesh	74	9·12	1·35	36·24	3·78	31·58	72·95
11. Maharashtra .	149	11·56	3·53	7·95	0·42	11·77	23·67
12. Mysore . .	137	10·50	2·89	8·35	0·55	14·18	25·97
13. Andhra Pradesh .	121	9·31	3·20	8·70	0·59	13·36	25·85

1	2	3	4	5	6	7	8
	Days	%	Rs.	Rs.	Rs.	Rs.	Rs.
14. Tamil Nadu & Pondicherry .	167	8·69	2·43	7·91	0·26	15·84	26·44
15. (i) Orissa . .	90	8·51	2·53	9·35	1·77	25·41	39·06
(ii) Assam . .	81	9·18					
(iii) Kerala . .	96	8·52					
(iv) West Bengal .	91	9·65					

Foot Note for Cost Schedules for future— (3 Years—1969/70 to 1971/72)

I. The above Table gives a break-up of the expenses for the different Zones under four categories, *viz.*, (i) constants; (ii) variables; (iii) semi-variables; and (iv) fixed charges which form the '*base*'. This has been drawn up with the sole objective of enabling Government to determine the quantum of conversion charges each year in future for (a) any duration and (b) any recovery.

II. The Basic conversion cost schedules computed thus do *not* include the following items :—

(i) Price of cane ;
(ii) Co-operative Society's commission (where applicable);
(iii) Purchase tax/cess; and
(iv) Driage on cane.

These will be determined by Govt. for each year and for each zone based on the weighted average of Minimum cane price for each zone, average of actuals for co-operative society's commission and purchase tax and all three adjusted for recovery in each zone as well as for driage.

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III. The application of th "*basic schedule of conversion charges*" (which is based on the average season days-of 22 hours; and average recovery) for (i) any duration; and (ii) any recovery in future, has been simplified for adoption of the figures in the foregoing Table and applying the following factors for correction :—

(a) *Constants.*—This group comprises 'Packing ' and 'Grade differentials' which will not undergo any change either for variations in 'duration' or for 'recovery' and the inc idence of unit cost ndicated in col. 4 of the table for the respective Zones will remain *static.*

(b) *Variables.*—Purely seasonal expenses (*i.e.* other than those normally incurred when crushing of cane does not take place), such as wages/salaries of seasonal recruits excluding allowance for retainers; relevant part of stores, repairs, cane centres & development, transport on cane after adjusting for rebates, shift depreciation, overheads and credits for recoveries. These items will vary only in respect of "recovery". For application, the appropriate figures in col. 5 of the table for the Zone concerned may be corrected thus :—

COL. 5 FIGURES × RECOVERY OF ZONE (COL. 3)

RECOVERY (to be determined for future by Govt. on the basis of weighted average of Zone).

(c) *Semi-Variables.*—'Power & Fuel', and 'retainer allowance' are covered by this item, which will vary with the changes in both 'duration' and 'recovery'. After adjusting initially the figures in col. 6 of the table for changes in 'recovery' in future on the basis of the formula :

RECOVERY IN COST SCHEDULE COL. (3)

RECOVERY (to be determined by Govt. as in (b) above)

the adjusted figures should be corrected for 'duration' thus :—

$$\left.\begin{array}{l}\text{COL. 6 OF TABLE AFTER ADJUSTMENT}\\ \text{FOR RECOVERY}\end{array}\right\} \times \frac{P.1\,(365-P_2)}{P.2\,(365-P_1)}\ \text{where,}$$

P.1 stands for season days in col. (2) of table and P. 2—season days to be computed for the zone on a weighted average basis for each year.

(d) *Fixed Charges.*—Expenses other than those covered by (a), (b) & (c) above which are of a fixed nature irrespective of duration or recovery are shown under col. (7) of the table. Corrections for future are applicable both for 'duration' and 'recovery'. Firstly, the figures in col. (7) are to be corrected for recovery as in the case of (c) above and the residual adjusted figures corrected thereafter for $\frac{P.1}{P.2}$

IV. The sum total of (a) + (b) + (c) + (d) will constitute the corrected conversion charges for future (excluding return & rehabilitation) for each Zone for changes in both 'duration' and 'recovery' which may be determined by Government on a weighted average basis for each zone.

V. *Return & Rehabilitation.*—The Commission has assessed an uniform sum of Rs. 10·50 per quintal as 'Return' and Rs. 2/- per quintal as Rehabilitation allowance'. *A total of Rs.* 12·50 *per quintal may be added* *up to the figure in IV above to obtain the "total conversion charges" for future. The return and rehabilitation as decided by the Commission will be treated as 'static' irrespective of duration or recovery.*

VI. A sample calculation has been made on a proforma basis to understand the principle of adjustment in future below :—

SAMPLE

Zone 1 : *Punjab.*—Assumed to have 120 days duration and 10% recovery from cane and cane price at Rs. 7·37 per quintal with an allowance of 5·36 paise for every 0·1% over 9·4% recovery. Driage has been taken at 0·41% on cane.

Items			Per quintal
			Rs.
(i) *Constants*			1·16
(ii) *Variables* $\left\{ \text{Rs. } 13{\cdot}20 \times \frac{8{\cdot}46\%}{10{\cdot}00\%} \right\}$			11·17
(iii) *Semi-variables*			
$\left\{ \text{Rs. } 0{\cdot}81 \times \frac{8{\cdot}46\%}{10{\cdot}00\%} \times \frac{98}{120} \times \frac{245}{{}^{*}267} \right\}$ (*vide III above)			0·51
(iv) *Fixed Expenses*			
$\left\{ \text{Rs. } 18{\cdot}63 \times \frac{8{\cdot}46\%}{10{\cdot}00} \times \frac{98}{120} \right\}$			12·87
(v) Total (i to iii)			25·71
(vi) *Add* fixed quantum of Return & Rehabilitation			12·50
(A) TOTAL CONVERSION CHARGES			38·21
(B) Add Cost of Cane & Related charges :	Rs.		
(i) Cane (incl. allowance for yield)	7·69		
(ii) Co-op. Society's commn.	0·13		
(iii) Purchase tax/cess	0·24		
(iv) Driage on cane at 0·41%	0·03		
TOTAL	8·09	$\frac{\text{Rs. } 8{\cdot}09}{10\% \text{ recovery}}$	80·90
(C) TOTAL (A + B)			119·11
(D) Excise duty—23% *Ad valorem* on (c) above			27·40
Ex-works Price (including Exise Duty) (for 120 days duration and 10% recovery)			146·51

VII. On the basis of the above calculations, appropriate prices can be determined for each of the Zones for any 'duration' and any 'recovery' obtained in each of the future years.

9.13. On the basis of the all-India average for 1966-67 (which as we have mentioned earlier is somewhat unduly deflated) of net block of Rs. 40.59 per quintal and Rs. 42.40 per quintal by way of working capital, this gross margin of Rs. 10.50 works out to 12.7 per cent of the calculated capital employed. It also amounts to 10.9 per cent on cost of production which after adjustment for interest and the effective incidence of corporation tax at 50 per cent (against the statutory rate of 55 per cent) would be about 3.5 per cent after taxation. Taking into account the special rehabilitation allowance also suggested by us, the corresponding percentages would be 15.1 per cent and 4.9 per cent respectively.

9.14. *Points in the terms of reference :* The Government in its terms of reference, as given in Appendix 1, have specifically requested the Commission to look into the following six points and make its recommendations thereon.

(i) "Should the classification of factories into zones be according to the recommendations of the Sugar Enquiry Commission, and if not, on what other considerations? What part crushing capacity of a factory should play in this classification? What should be the zones into which the factories should be grouped, having regard to the basis of classification which may be recommended by the Tariff Commission?"

For the detailed reasons given in Chapter 8 dealing with the zonal distribution of factories, we have decided to *constitute units in each State into one group, except where this would have led to greater anomalies when applied to States like Uttar Pradesh and Bihar which have been sub-divided into three and two zones respectively, while the States of Orissa, Assam, Kerala and West Bengal will have a common schedule, Pondicherry has been grouped with Tamil Nadu.*

With regard to the question of crushing capacity, which has been discussed earlier in this chapter in paragraph 9.2, it is seen that a large majority of the factories fell in the group of 1000/1500 tonnes range (about 67%). The average capacity of the costed units worked out to 1529 tonnes per day, while the all India average of all the units in the industry came to 1455 tonnes per day. We have therefore worked out a cost schedule based on 1000 to 1500 tonnes capacity and allowed price differentials for units having higher and lower capacities. Taking all factors into consideration, *we have discovered that factories with capacities of less than thousand tonnes have a disadvantage of the order of Rs.* 3/- *per quintal and those above* 1500 *tonnes have a relative advantage of the order of Rs* 2/- *per quintal compared to the conversion charges of the average capacity range,* which has been adopted in formulating the basic cost schedule. Having regard to the fact that we have recommended fixation of uniform prices on the basis of zonal averages it is not practicable to make the necessary adjustment for rectifying this disparity in the ex-factory price structure. *We would, however suggest that as a measure of neutralising these relative cost advantages and disadvantages related to capacity, a graded slab system of excise duty may be introduced in place of the present flat rate.*

(ii) "While preparing cost schedules for price fixation, the Commission might recommend the basis on which the provision for depreciation should be made. Whether depreciation allowed in the cost structure should be calculated on the replacement value or on the written down values of assets and how individual factories which modernise their plant or expand their capacities should be compensated for the investment made".

As discussed in detail earlier in paragraph 9.9, we have decided not to calculate depreciation on replacement value but only on the written down values as obtaining for Income-tax purposes. *With regard to rehabilitation, we have, for the detailed reasons noted in para* 9.10, *recommended a uniform amount of Rs.* 2.00 *per quintal for a period of five years, the amount so collected being accumulated in a separate fund and allowed to be utilised by units which need rehabilitation, under appropriate supervision.*

(iii) "Whether provision should be made in the prices to compensate units situated in an area which under free market conditions, would have an inherent advantage over units in other areas due to higher productivity and better efficiency? If so, what should be the provision?".

We do not feel that any specific provision is required to be made to compensate units situated in an area which, under free market conditions, suffer an inherent disadvantage over units in other areas having better recovery and efficiency. *In our view the answer to this problem could only be pooling of the sugar production in the country and selling it through a common organisation, so that a uniform price is realised by all the units and at the same time the interests of the consumers are also safeguarded. So long as free market conditions exist, wholly or partly, it is inevitable that a section of the units in States which have better recoveries and longer duration of crushing and consequentially lower costs, would always be in a better position to compete in the market at the cost of others who are less efficient mainly due to lower recovery and shorter duration.*

(iv) "Whether to encourage organised and efficient system of harvesting and quick transport of sugar cane from the fields to the factories, ex-field price for sugar cane should be fixed and provided for in the price of sugar?".

Hitherto the price structure for sugar takes into account only the minimum 'gate-cane' price fixed by Government from time to time. Certain rebates are however allowed on the price so fixed for transport by road at 2.5 Paise per quintal per kilometre subject to a ceiling of 32 Paise per quintal. For rail transport, the deduction is at the flat rate of 32 Paise per quintal. Only in Maharashtra the system of ex-field price is in vogue. With high recovery, the Maharashtra units are in a position to pay prices for cane at higher levels which are found economical to them. *We feel that the present system obtaining in all the States may, for the time being, be continued.*

(v) "Whether and to what extent incentives should be given to compensate factories for the losses in recovery of sugar from sugar cane due to early start or working late into the hot weather".

None of the units examined has sufficient data to assess this element. As noted earlier, we have for the purposes of the cost schedule taken into account the average recovery and average duration based on the actuals of the past five years. This averaging takes into account the costs for early start, peak season and also the late working. For the *above reasons we do not consider any incentives are required to be given on this score.*

(vi) "How far the mechanism of price fixation can be used to induce growers to supply cane to sugar factories regularly irrespective of fluctuations in gur and khandsari prices?".

As we see it, so long as gur continues to absorb almost double the quantity of cane as the sugar industry, *it would be difficult particularly in years of scarcity, to ensure regularity of supplies of sugarcane to sugar factories solely through the mechanism of fixation of* the price of cane. In any case as we have indicated in some of the preceding chapters, the problem is one of the successful implementation of a variety of measures for improving the production and rationalising the distribution of sugar cane accompanied by steps designed to secure the stabilisation of prices of the two principal cane-based sweetening agents, namely sugar and gur, as well as the establishment of reasonable *inter se* price parity between them. *In the long run, one could even consider a price linking formula for cane working back from the price of sugar, on the lines of the system now operated by the Government of the sugar producing State of Queensland in Australia.*

CHAPTER 10

LONG-TERM PROSPECTS—SOME SUGGESTIONS REGARDING

10.1. In the following paragraphs we have taken the opportunity of touching upon some of the concrete suggestions that have been placed before us or have occurred to us on these matters. It is generally accepted that in the long run, cost and competitive efficiency can be increased in this major agro-industry only by improvement of cane production with a view to raising the recoverable sugar per hectare engaged in cane cultivation. There is also considerable scope for further improvement in technical efficiency as many of our factories do not compare well in the matter of milling and boiling house efficiency already attained by some major sugar producers elsewhere in the world. Similarly there is scope for rationalisation in the traditional marketing techniques both in the matter of supply of cane to sugar factories as well as in the supply of sugar to the consumer.

It is now well recognised that general price stability accompanied by some cost reduction in sugarcane, can be brought about by stepping up developmental activities. Thus by raising the yield to higher levels and improving the sucrose content of cane would help in maintaining a satisfactory parity in the return to cane growers as compared to that for other cash and food crops. This factor has assumed greater urgency in the context of higher returns now available to the growers of high yielding varieties of food grains.

10.2. **Cultural efficiency.**—As regards improvements in cultural efficiency, the measures needed are fairly well-known and these have gained wide acceptance. Put briefly these are (a) betterment and rapid extension of irrigation and transportation facilities, (b) rationalisation of production and supply system through compacting of areas and improving relations between the growers and factories, (c) intensification of coordinated research activity for development of improved varieties of seeds, their rapid propagation and (d) supported by adequate supplies of the requisite inputs by way of water, fertilisers and organic manures as well as appropriate plant protection measures.

In the practical application of these measures and in the matter of provisio of the requisite inputs considerable further effort both financial and administrative is needed.

10.3. **Marketing.**—Apart from rainfall, frost and other natural phenomena which to a large extent affect the sugarcane and consequently, the sugar economy, it has been noticed that in the bumper years for cane, prices of gur and sugar both tend to fall sharply (the former more than the latter because of the cushioning effect of price control on sugar) thereby aggravating the cyclical phenomenon already referred to in Chapter 3. As a price stabilisation measure with a view to minimising this tendency, we would endorse the Sen Commission's suggestion with regard to the *building up of a buffer stock of sugar.* In this connection *we would further suggest that the possibilities of extending this concept to gur also could be usefully examined.* Conceivably a part of the gur so stocked could later on be even made available for remelting and refining into sugar.

Government should start purchasing Gur when prices of Gur tend to fall below Rs. 60/- per quintal in the context of to-day's prices and also remove restrictions on its movement. Otherwise there is a danger that the area under cane may shrink again in the next season.

10.4. **Technical efficiency.**—In addition to the need for improving efficiency by replacement of plant and machinery for which some financial provision has been suggested in Chapter 9 it seems to us that a practical way of improving cost efficiency of the factories in the sub-tropical belt lies in the direction of extending their normal duration and improving their overall efficiency in the matter of recovery also, by actively promoting the cultivation of sugar beet and using it either along with cane or as the cane season starts tapering off, by extending plant activity, based almost wholly on beet. We are told that sugar beet has a higher sucrose content and could be grown during the rabi season in the same fields after early cane is harvested therefrom. We also understand that this would need installation of a diffuser and require the carbonation process for its refinement. A cane-*cum*-beet diffusion process would give the sugar factory an added advantage by way of better recovery from pure cane juice apart from its ability to handle beet as well. We understand that the technology regarding processing of sugar from beet is available with the National Sugar Institute of Kanpur; also that some sugar factories have already installed the diffusion plant and claim to be running these successfully after the initial teething troubles, even with cane juice alone. We also saw an experimental plantation of sugar beet in a factory farm in Madhya Pradesh. *We therefore, feel that the potentialities of further development on these lines would need intensive exploration.* It also seems to us that if successful, at least *in the initial stages, factories which are already working on carbonation process should be encouraged to instal diffusers. Similarly, interplanting of* sugarcane and beet would require in its early stages coordinated *centralised efforts.* This should not be left entirely to the initiative of either sugar factories or the large number of cane cultivators. The *possibility of setting up purely beet based sugar refining capacity in the Hilly and Terai areas to form an additional part of beet-sugar development programme may be explored.* The question of conversion of some of the purely sulphitation factories into carbonation ones for similar development could be considered later.

10.5. Another suggestion requiring further exploration is the question of *setting up some separate refineries for conversion of raw sugar and/or gur into refined crystal sugar.* Having regard to the fact that cane is available for crushing for only a part of the year but the requirement of sugar is spread throughout the period, if a way could be found to stagger the later stages of sugar making activity, there would *prima facie* be some advantage in separating this part of the refining activity, namely, centrifuging and subsequent operations. This would lead to some savings in financial outlay by way of reduced centrifuging, drier house and packing machinery costs, reduced working capital and better staff balance. Moreover a separate refinery could hope to specially refine a quantity for the export markets and thus improve exchange earnings. We appreciate that adoption of this suggestion would need much closer study than has been possible for us to give it. *We would accordingly suggest that, as a first step, the matter may be further examined in depth by a competent body.*

10.6. Finally another possibility which could be usefully explored relates to the *marketing a part of the sugar now produced in the crystal form in the form of liquid sugar.* We gather that two types of sugar in liquid form are being increasingly used in foreign countries. These are *high test molasses syrup and liquid sugar.* We are informed that high test molasses syrup contains several impurities both organic and inorganic, and therefore, may not be liked for direct use by the consumers. We, however, understand that if this syrup is *decolourised with activated carbon and passed through ion-exchangers* most of the colouring material and ash forming constituents can be reduced or removed *so as to render it suitable for direct use.* Even in the crude form such molasses are being put to industrial uses *e.g.*, in sizing, textile dying etc. The main countries producing high test molasses syrup are Cuba and U.S.A. and there it is generally used for distillation.

10.7. Another consumable form of *liquid sugar* is prepared *by dissolving well-washed raw sugar.* The liquor after clarification is decolourised with carbon and concentrated in an evaporator. The concentrated liquor is then passed through ion-exchange columns at the appropriate temperature to have the required inversion. We understand that this type of liquid sugar is being *commonly used in food and non-food industries in other countries.* Among the food industries using liquid sugar, mention may be made of baking, beverages, syrup, confectionery, ice-cream, dairy products, canning and food preservation industries. Among the non-food industries, the pharmaceutical industries are its main users. *Since these food, beverages and pharmaceutical industries are also developing in India it is likely that the demand for liquid sugar would improve. It might also be more economical if such sugar came from the sugar factory or refinery rather than be left for re-conversion from out of bagged crystal sugar by the user industry itself.*

10.8. A note regarding the present position in respect of technical efficiency of the sugar industry is at Appendix-38.

10.9. **Research and development.**—Over and above efforts directed towards higher productivity of cane, *there is a great deal of scope for continuous improvement in the recovery of sugar from cane.* Actually, in the matter of sucrose content as well as the average yield, we still rank among the lowest in the world. This situation has to be remedied. However, as the Planning Commission has not envisaged any further expansion of the total area under cane in the Fourth Plan period, the higher production target for sugar is to be achieved principally through an improved agronomical approach, particularly in the direction of raising simultaneously the yield and the sucrose content of cane. In this context, it is *essential that the Indian Council of Agricultural Research,* through its attached bodies like the Sugarcane Breeding Institute, Coimbatore, the Indian Institute of Sugarcane Research, Lucknow, and the Field Station at Shahjahanpur, *should make arrangements for sustained efforts to achieve these objectives.* At the same time, *it will be profitable to establish enduring coordination between the field and manufacturing activities,* particularly in the form of effective liaison between the above-mentioned Institutes and the National Sugar Institute, Kanpur. *It is hoped that realistic priorities will be laid down for research and development and bottlenecks of manpower and equipment will not be allowed to block the way.* In other words, adequate funds should be forthcoming for such work. *We learn that a National Agricultural Commission is to be set up shortly. We have no doubt that these problems will be examined in greater detail by the new Commission.*

10.10. The *implementation of* the cane development programme indicated above *would be greatly facilitated if the State Governments made it a point to utilise in accordance with their original intention, the entire proceeds of the cess/purchase tax on cane for the stated objective of development.* We have been told that substantial funds so collected, have been diverted to other uses. We have no doubt that there would have been weighty reasons for such action on the part of the State Governments but it can hardly be over-emphasised that having regard to the long-term interest of the Industry and also the consumers, this matter needs to be re-examined. This has already been done by the Government of Punjab and we would invite the attention of the other State Governments also to the need for similar action in this regard.

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CHAPTER 11

SUMMARY OF SUGGESTIONS, CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and recommendations are summarised as under :

(1) We would like to emphasise the need to bring the uneconomic units in the industry to economic size expeditiously.

(Paragraph 2.2 to 2.5)

(2) The present licensed capacity of the sugar industry in terms of sugar production is reported to be 44.69 lakh tonnes whereas the installed capacity is put at 34.69 lakh tonnes at the end of 1967-68 season. The Planning Commission has envisaged sugar production target at 47 lakh tonnes by 1973-74 which is to be achieved partly through expansion of the existing units and partly through establishment of new units, primarily in the cooperative sector.

(Paragraphs 2.6 and 2.7)

(3) The most significant development relating to the structure of the sugar industry during the last decade was the emergence of a strong co-operative sector which expanded from 3 units in 1955-56 to 30 in 1960-61, 52 in 1965-66 and 57 in 1967-68.

(Paragraphs 2.1 and 2.9)

(4) The share of the co-operative sector in the total sugar production has sharply increased from less than half per cent in 1950-51 to about 15 per cent in 1960-61 and stood at 31 per cent in 1967-68. The co-operative sector has also played a prominent role in the manufacture of raw sugar for export and its share increased from 40 per cent in 1962-63 to 74 per cent in 1967-68.

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(Paragraphs 2.12 to 2.14)

(5) We have been informed that out of the loans given by the Industrial Finance Corporation, an appreciable part has to be cross man dated to the Life Insurance Corporation which has been reported to have created certain procedural difficulties leading to delays in the implementation of their programmes. We hope that this would receive sympathetic consideration from the concerned authorities.

(Paragraphs 2.15 to 2.20)

(6) Sugarcane offers a better return compared to other agricultural products. The area under sugarcane has tended steadily to rise, nevertheless the acreage has not been stable. A four year cycle, two of reduced area followed by two of expansion have been the characteristic features of sugarcane cultivation. Based on this trend the prospects are that the years 1968-69 and 1969-70 will be the years of plenty followed again by two lean years.

(Paragraphs 3.1 to 3.4)

(7) For the reasons explained in paragraphs 3.12 and 3.13 it cannot be concluded that tropical belt is basically more suitable than sub-tropical one for the production of cane.

(Paragraphs 3.12 and 3.13)

(8) It is difficult to accept the figure of 12 per cent of the total cane produced as requirements of setts and miscellaneous uses. We also understand that about 5 to 6 per cent of the total cane produced is required by the khandsari manufacturers. We believe that the demand for sugarcane for consumption in the form of khandsari, chewing setts and gur is generally less elastic than the demand for consumption in the production of sugar.

(Paragraph 3.14)

(9) Notwithstanding the so-called diversion of cane in lean years for making gur and khandsari, the rate of growth for the sugar industry has been substantial. With the rise in production of cane, the share of the sugar industry in its utilisation has been proportionately larger than that of other uses to which the cane is put.

(Paragraph 3.15)

(10) We bring to the notice of the concerned authorities that unless a better balance could be rapidly restored between the demand for and supply of sugarcane to the majority of sugar factories in the State of Bihar, their economic viability is likely to steadily worsen.

(Paragraph 3.18)

(11) Even if factors such as high prices of gur which have sometimes gone above the controlled price of sugar, the greater recovery of gur owing to lack of elimination of molasses, impurities and mud, the absence of statutory control on gur prices and lesser cost of conversion are excluded the gur manufacturer has still an edge of about Rs. 5.00 per quintal of cane or about 66 per cent of the minimum prices fixed for sugarcane purchased by factories.

(Paragraph 3.19)

(12) It has to be recognised that there is certain basic demand for gur, khandsari and other uses which has to be satisfied and the surplus cane alone is made available to sugar manufacturers.

(Paragraph 3.20)

(13) Since khandsari uses hardly between 5 to 6 per cent of the total cane produced which is equivalent to only about one-fifth of the cane used by sugar factories, it needs to be recognised that even if stringent measures are adopted to discourage khandsari manufacture, the surplus cane thus available would provide only a marginal relief to the suar factories. It would appear therefore, that khandsari manufacture offers hardly any real threat to the growth and development of the sugar industry. On the other hand, there is some room for sympathy

for the small scale industry which serves to supplement the availability of white sugar and at times operates to keep sugar prices in check.

(Paragraph 3.22)

(14) Any attempt to regulate supplies of cane to gur and khandsari manufacturers seems to be an impracticable proposition since it has not been found practicable to deliver adequate supplies of sugarcane even to sugar factories through the agencies of Cane Marketing Co-operative Societies.

(Paragraph 3.23)

(15) There is a certain basic relationship in cane utilisation between the growth ratios of gur (including khandsari) and sugar and it does not seem advisable to drastically distrub it. The solution to the problem of full utilisation of capacities by the sugar industry lies in the direction of securing area and price stability for sugarcane which could prevent year to year fluctuations. The need, therefore, is as much to control excessive production as under-production of sugarcane both of which lead to market disruption and cause serious disequilibrium in the established supply pattern of cane.

(Paragraph 3.24)

(16) The need to plan, nurse and develop the sources of raw material near the factory premises is all the greater for the agro-based industry since its raw material is highly perishable and transportation leads to loss, driage and pilferage and reduces the efficiency of sugar production or viability of the factory.

(Paragraph 3.25)

(17) A practical solution to the problem referred to in the preceding item would be to provide an area of about 60 sq. kilometres per 1000 tonnes of crushing capacity around each factory which the factory could scrupulously nurse and develop. Sugar units situated too close to each other may be dispersed in such a manner that there is no overlapping of the reserved area. We hope that concerted attempts would be made in this direction even though such measures which involve long term planning might take sometime to bring about perceptible results. In this connection we have suggested the following measures :

(i) With the help of Agricultural and Cane Development Departments of States and of Cane Development Societies, estimates should be framed in advance of the optimum requirements of sugar factories, gur and khandsari units and for other incidental uses, keeping in view the rate of growth of capacity in the sugar factories as also of gur and khandsari. These estimates may be related to the average yield of the region and area required may be determined. The next step should be to distribute this area over the various territorial, administrative or development sub-divisions and to provide assistance only to the area so determined and discourage over-production.

(ii) Maximisation of irrigation facilities for the cane growing areas should be tried and as far as possible in the areas within a radius of about 5 to 6 kilometres of sugar factory so that if total irrigation is available in this area it may help in future plan of compacting cane areas in the immediate command of sugar factory.

(iii) Price mechansim should be so adjusted that while not being unremunerative to the cane grower the sugar factories may not be forced to crush beyond the limit of economic capacity and the excess being converted into gur and/or khandsari.

(iv) In the year of shortage the size of the crop may be estimated well in advance and price provided which would ensure adequate supply to sugar factories.

(v) Since cane crop occupies only 1.8 per cent of the total crop area in the country, any marginal increase in this area which may be conducive to the satisfaction of the demand should not cause undue alarm.

(vi) Cane development programmes should be vigorously pursued by all the States to ensure high yields and freedom from disease. In area where cane cannot be developed to meet the factory's requirements, shifting of such a factory to another area of assured requisite supply may be favourably considered.

(vii) Density of sugar factories in relation to areas needed by them should be determined and dispersal effected keeping in view the growth and full utilisation of capacity installed as well as of cane produced.

(viii) Bihar appears to have special problems and we feel that it may even be necessary to increase the present proportion of area under cane from 1.8 per cent to about 2.5 per cent of the total cropped area to ensure better supplies.

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(Paragraph 3.26 and 3.27)

(18) We have suggested that realisation of purchase tax will go a long way towards cane development if applied in a planned manner.

(Paragraph 3.29)

(19) Production of sugar has generally shown an upward trend in the last decade and a half, though there have been wide fluctuations and seasonal ups and downs. Production of sugar recorded an increase of about 213 per cent from 11 lakh tonnes to 35.5 lakh tonnes during the period 1950-51 to 1965-66 and even in the worse year *i.e.* 1966-67 the production at 22 lakh tonnes was higher by about 100 per cent.

(Paragraph 4.2)

(20) The quality of Indian sugar in terms of grain, size and colour has shown a continuous marked improvement.

(Paragraph 4.5)

(21) Our own estimte of demand for sugar at 47 lakh tonnes including 5 lakh tonnes for export is the same as that of the Planning Commission for the Fourth Plan period.

(Paragraph 4.13 to 4.15)

(22) The present estimate of annual production of gur and khandsari is about 65 to 70 lakh tonnes.

(Paragraph 5.2)

(23) It does appear that during the last decade there has been a noticeable shift towards a more expensive utilisation of cane for sugar manufacture and the expectation expressed in our 1959 Report that sugar industry will progressively attract to itself in larger proportion of sugarcane crop at the expense of gur industry has only partially materialised.

(Paragraph 5.3)

(24) The processes of gur manufacture mentioned in paragraph 5.6 might provide sugar factories a more economic utilisation of plant and man-power capacities without facing very low recoveries which prolonged cane crushing often entails. The old system of producing khandsari is also being gradually replaced by modern system of using power crushers and centrifugal machines. This has resulted in substantial improvements in recoveries as well as in the quality of khandsari sugar.

(Paragraph 5.6)

(25) Per capita consumption of sugar, gur and khandsari taken together averaged 15.1 kg. during the First Plan, 18.2 kg. in the Second and 19.4 kg. in the Third Plan periods.

(Paragraph 5.7)

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(26) While it is difficult to be precise, comparative study of consumption and price data seem to support the inference that relative price levels between sugar and gur would determine the levels of *inter se* demand. One could broadly conclude that whenever gur prices fall to the levels of something like one-third that of the price of vacuum pan sugar the former begins to enjoy an edge over the latter. As this ratio tends to approach 1 : 2 sugar consumption tends to rise at the expense of gur.

(Paragraph 5.8)

(27) There is closer co-relation between price movement of sugar and khandsari than between sugar and gur prices.

(Paragraph 5.9)

(28) Presently bagasse is almost entirely used by the sugar factories as fuel in the boilers. With the increasing demand for paper and board and a developing shortage of other pulping material there is considerable scope for increased utilisation of bagasse for the production of paper

and pulp. We hope that further development of bagasse based paper industry might in the long run prove to be an important step for more economic utilisation of this by-product of the sugar industry. A careful and detailed examination of the means by which an increasing quantity of bagasse can be progressively diverted for the production of paper is called for. Progressive substitution of bagasse by other fuels for sugar manufacture has been suggested by several committees. Having regard to the long term aspect of the matter, we suggest that reasons for persistent reluctance on the part of the Indian industry for not doing so may be further investigated. The manufacture of furfural from bagasse appears to be another desirable step towards import substitution. In this connection we emphasise that the National Sugar Institute should give a wide publicity to the results achieved through its experiments. Bagasse with other agricultural waste can also be used for conersion into bio-gas for fuel and bio-manure. These are some of the other directions of bagasse utilisation which would require to be further explored.

(Paragraph 6.2)

(29) Molasses contains about 40 per cent of sugar. About 70 per cent of this by-product is made available to distilleries while its other uses are as manure, cattle feed, tobacco curing and foundries. The main difficulty standing in the way of better utilisation of the entire production of molasses by distilleries seems to be the absence of adequate storage facilities as well as distribution and transport facilities from the sugar factories to various consuming industries spread all over India. A detailed examination of the various issues of molasses has been made in our Report on the Fair Selling Prices of Alcohol.

(Paragraph 6.3)

(30) Production of press-mud is about 3 per cent of the cane in sulphitation factories and nearly 7 per cent in carbonation factories. At present there is no economic utilisation of this by-product. The Central Building Research Institute has recently evolved a method of converting carbonation press-mud into building lime according to the Indian Standards Institution specification. Sulphitation press-mud contains sugarcane wax varying 8 to 10 per cent of mud. Attempts have been made to extract wax which can be used in place of imported carnauba for the manufacture of carbon paper, leather and other polishes, wax paper and emulsion for coating purposes, for preservation of food etc. We understand that pilot plant trials at the National Sugar Institute for the production of refined and modified wax and blending them in a suitable proportion to make them suitable for the preparation of the desired quality of polish and carbon papers are soon to be undertaken. We suggest that the National Sugar Institute may complete its investigations and provide know-how for the industrial production of proper blends of waxes and thus throw open the possibilities of sizeable quantities for sulphitation press-mud being utilised for the production of wax.

(Paragraph 6.4)

(31) We find that the existing price schedules determined on the basis of 5 zones have resulted in enlarging the extent of regional disparity. Having regard to the various factors and view points explained in paragraph 8.15 we have come to the conclusion that, on the whole, a practical course to follow will be to substantially increase the number of price zones so as to reduce, though not eliminate, *inter se* anomalies in the cost structure without resorting to extremes of fixation of price for each unit or a single or at the most two prices, one for the subtropical and the other for the tropical one. We hope that in due course of time conditions will be created making the operation of the second alternative feasible but with cost differences as they exist today, there seems to be little practical alternative except further subdivision instead of consolidation of the existing zonal structure. Keeping these factors in view and the extrapolating results of the sample analysis, we have decided to constitute units in each State into one group, except where this would have led to greater anomalies when applied to States like Uttar Pradesh and Bihar which have a large number of units situated in areas which are climatically dissimilar. We have therefore suggested in all 15 zones.

(Paragraph 8.15)

(32) Having regard to the State-to-State variations and season-to-season fluctuations, we consider that it will be more realistic to recast the cost schedules for price fixation purposes, taking actual five years' average recovery and duration of a region as their base. We have adopted this basis for our working and consider that no further adjustments are called for either for the capacity operated, or for the utilisation of operating hours as these are mainly dependent on the availability of cane and thus largely beyond the control of sugar factories.

(Paragraph 9.4)

(33) It is established that a large number of units require rehabilitation having depreciation much lower than the average of the industry.

(Paragraph 9.9.7)

(34) Rehabilitation should not be linked to the replacement cost or the difference between depreciation at replacement or historical cost. Nevertheless, it is necessary to ensure that in the interest of maintenance of continuity of sugar production at an appropriate level, such of the units which can be brought to a standard of normal efficiency should be helped to rehabilitate themselves. We have, therefore, made a provision of Rs. 2/- per quintal by way of rehabilitation grant to the industry. This sum should be funded separately to be utilised under close supervision. For administering this fund, we would suggest setting up of a Board consisting of a representative each of the Central Government, the industry and the National Sugar Institute to ensure by constant supervision that the funds are applied entirely for the renovation of the plant and machinery.

(Paragraphs 9.10.4 and 9.13)

(35) As regards return, it is our view that the present requirements of this particular industry can be more equitably met only by a departure from our conventional method and by adopting instead a uniform amount per quintal as a margin to be added to thier costs in arriving at the fair price of sugar. Accordingly, we have come to the conclusion that Rs. 10·50 per quintal would be a fair amount to be so added.

(Paragraph 9.11)

(36) A basic schedule of conversion charges together with suitable footnotes is given in Table No. 9·7 to enable Government to fix prices of sugar for future in different Zones.

(Paragraph 9.12)

(37) We have discovered that factories with capacities of less than 1000 tonnes have a disadvantage of the order of Rs. 3/- per quintal and those above 1500 tonnes have a relative advantage of the order of Rs. 2/- per quintal compared to the conversion charges of the average capacity range which has been adopted in formulating the basic cost schedule. Having regard to the fact that we have recommended fixation of uniform prices on the basis of zonal averages, it is not practicable to make the necessary adjustment for rectifying this disparity in the ex-factory price structure. We would, however, suggest that as a measure of neutralising these relative cost advantages and disadvantages related to capacity, a graded slab system of excise duty may be introduced in place of the present flat rate.

(Paragraph 9.14)

(38) So long as free market conditions exist, wholly or partly, it is inevitable that a section of the units in States which have better recoveries and longer duration of crushing and consequentially lower costs, would always be in a better position to compete in the market at the cost of others who are less efficient mainly due to lower recovery and shorter duration.

(Paragraph 9.14)

(39) As regards harvesting and transport of sugarcane from the fields to the factories, we feel that the present system obtaining in all the States may for the time being be continued.

(Paragraph 9.14)

(40) We do not consider any incentives are required to be given to compensate factories for the losses in recovery of sugar due to early start or working late into the hot weather.

(Paragraph 9.14)

(41) It would be difficult particularly in years of scarcity to ensure regularity of supplies of sugarcane to sugar factories solely through the mechanism of fixation of prices of cane. The problem is one of successful implementation of a variety of measures for improving the pro-

duction and rationalising the distribution of sugarcane, etc. referred to in some of the preceding paragraphs. In the long run, one could even consider a price linking formula for cane working back from the price of sugar, on the lines of the system now operated by the Government of the sugar producing State of Queensland in Australia.

(Paragraph 9.14)

(42) It is generally recognised that in the long run, cost and competitive efficiency can be increased in this major agro-industry only by improvement in cane development with a view to raising recoverable sugar per hectare. There is also scope for further improvement in technical efficiency and also for rationalisation in the traditional marketing techniques both in the matter of supply of cane to sugar factories as well as in the supply of sugar to consumers. Developmental activities have to be stepped up to raise the yields to higher levels and improving sucrose content of the cane and to help in maintaining a satisfactory parity in the return to cane growers as compared to other crops.

(Paragraph 10.1)

(43) The measures needed for improvement in the cultural efficiency are fairly well-know and have gained wide acceptance. In the practical application of these measures and in the matter of provision of the requisite inputs, considerable further efforts both financial and administrative are needed.

(Paragraph 10.2)

(44) We endorse the Sen Commission's suggestion with regard to building up of buffer stocks of sugar as a price stabilisation measure. We would further suggest that possibilities of extending this concept to gur could be usefully examined against the background of the possibility of remelting it later for refining into sugar.

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(Paragraph 10.3)

(45) Government should start purchasing gur when prices of gur tend to fall below Rs. 60 per quintal in the context of today's prices and also remove restrictions on its movement. Otherwise there is a danger that the area under cane may shrink again in the next season.

(Paragraph 10.3)

(46) It seems to us that in addition to the need for improving efficiency by replacement of plant and machinery for which some financial provision has already been suggested, the practical way of improving cost efficiency of the factories in the sub-tropical belt lies in the direction of extending their normal duration and improving their overall efficiency in the matter of recovery also by actively promoting the cultivation of sugar beet and using it either along with cane or as the cane season starts tapering off, by extending plant activities based almost wholly on beet. The possibilities of further development on these lines would need intensive exploration. In the initial stages, factories which are already working on carbonation process should be encourag-

ed to instal diffusers. Similarly, interplanting of sugarcane and beet would require in its early stages co-ordinated centralised efforts. We are of the view that possibility of setting up purely beet-based sugar refining capacity in the hilly and terai areas to form an additional part of beet sugar development programme may be explored.

(Paragraph 10.4)

(47) Another suggestion requiring further exploration is the questions of setting up separate refineries for conversion of raw sugar and gur into refined crystal sugar. While apparently there may be economies all-round we feel that economies of the proposal need much closer study by a competent body.

(Paragraph 10.5)

(48) Another possibility which could be usefully explored relates to marketing a part of sugar now produced in the form of liquid sugar. Liquid sugar is being commonly used in food and non-food industries. Since these food, beverage and pharmaceutical industries are also developing in India, it is likely that the demand for liquid sugar will improve. It might also be more economical if such sugar came from the sugar factory or refinery rather than be left for reconversion from out of bagged crystal sugar by the industry itself.

(Paragraph 10.7)

(49) There is a great deal of scope for continuous improvement in the recovery of sugar from cane. In this context it is essential that the Indian Council of Agricultural Research should make arrangements for sustained efforts to achieve the objectives. It will also be profitable to establish enduring co-ordination between the field and manufacturing activities. It is hoped that realistic priorities will be laid down for research and development and bottlenecks of man-power and equipment will not be allowed to block the way. The National Agricultural Commission may examine these problems in greater detail.

(Paragraph 10.9)

(50) Cane development programmes would be greatly facilitated if the State Governments make it a point to utilise in accordance with the original intention the entire proceeds of the cess/purchase tax on cane for the stated objective of development. We would invite the attention of the State Governments to the need for action in this regard.

(Paragraph 10·10)

Acknowledgements.—We wish to place on record our thanks to the producers of sugarcane, manufacturers and consumers of sugar and their respective associations, particularly the Indian Sugar Mills Association and the National Federation of Co-operative Sugar Factories as well as their regional committees and the ISMA's Costing Sub-Committee, the concerned departments of the State and Central Governments and Research Institutions who furnished us with detailed information. We are also grateful to all their representatives who tendered evidence before us on different occasions.

We should like to express our gratitude to Prof. J. J. Anjaria, Deputy Governor of the Reserve Bank of India who spared some time for an informal discussion with us on certain cost aspects. Our thanks are also due to Shri V. V. Divatia, Statistical Adviser, Shri P. K. Pani, Director and other Officers and technical staff of the Reserve Bank of India, Bombay who undertook at our request a detailed statistical study of the impact of factors like capacity, duration and recovery on the cost of manufacture of sugar.

We are also indebted to Dr. D. T. Lakdawala, Professor of Economics, and Dr. B. V. Mehta, Reader in Industrial Economics, University of Bombay, Dr. R. K. Hazari, Editor, Economic and Political Weekly and Prof. S. V. Kogekar, Member, Forward Markets Commission. We are also greatly obliged to Dr. R. C. Cooper and Shri S. V. Ghatalia, Chartered Accountants, who gave as expert advice on certain important general aspects of cost components involved in price fixation of sugar.

We had also the benefit of discussion with the Chairman and Members of the Agricultural Prices Commission, Shri K. L. Pasricha, Joint Secretary and Shri K. P. Jain, Deputy Director General of Food in the Ministry of Food and Agriculture and Shri N. Krishnan, Chief Cost Accounts Officer, Ministry of Finance, on various issues arising out of this inquiry.

Our thanks are also due to Prof. K. T. Merchant who was associated with this inquiry from its inception as Member-in-charge and had to leave the organisation before the Report could be drafted.

We would also like to express our thanks for the technical assistance received from Shri A. K. Roy, Senior Technical Officer, National Sugar Institute, Kanpur who was appointed as Assessor for this inquiry. We would also like to place on record our appreciation of the very hard work put in by the Officers and staff of the Commission engaged on this major inquiry.

B. N. BANERJI
Chairman

M. ZAHEER
Member

S. SUBRAMANIAN
Member

F. H. VALLIBHOY
Member

P. V. GUNISHASTRI
Secretary

Bombay, 24th September, 1969.

APPENDIX 1

(*Vide* Paragraph 1.1.2]

GOVERNMENT OF INDIA

MINISTRY OF COMMERCE

RESOLUTION

Tariffs

New Delhi, the 7th February, 1968.

No. 10(1)-Tar./68.—The Indian Tariff Commission examined during 1958-59 the cost structure of sugar and the fair sugar price payable to sugar industry and submitted its report on the subject in September, 1959. The cost schedules prepared by the Tariff Commission were adopted by Government for determining ex-factory prices of sugar from year to year.

2 In August, 1964, the Government of India appointed the Sugar Enquiry Commission to make a comprehensive enquiry into various aspects of sugar industry including the economics of sugar production and its cost structure. The Sugar Enquiry Commission submitted its report in October, 1965. The Government of India used the schedules prepared by the Commission for fixation of ex-factory prices during the year 1965-66 to 1967-68. The sugar industry has represented that the cost schedules prepared by the Sugar Enquiry Commission are based on the cost data of the crushing season 1963-64 and since then, the costs have risen sharply. Twelve per cent return allowed at present on the employed capital, it is argued, is inadequate due mainly to the increase in the lending rates by the banks. Further, that depreciation allowed is not commensurate with the increase in the cost of renewal and replacements. The Schedules, it is added, also do not provide adequtely for costs incurred on transportation of cane from outstation centres which have to be necessarily opened on the orders of the State Governments. The pricing system should also take into account the capacity factor which varies widely from factory to factory in a price zone. A change in the capital structure of the industry has occurred due to the establishment of new factories and the expansion of a large number of old units. The new and the expanded units have the advantage of scale: large modern units employ labour-saving devices, reduce costs and maximise profits.

The Industry has also emphasised the need to provide adequate depreciation in the cost schedules to enable the factories to modernise and rehabilitate their worn out plant and machinery. It is urged that if depriciation is allowed only on written down values without taking cost of replacement into account, then the provision in the price of sugar on this account is bound to be inadequate. Within a zone, the practice of taking the average value of net fixed assets as the basis for calculation of depreciation works to the disdavantage of those factories which spend money for replacement or renewal of their assets; their investment is averaged over the whole zone and the units which do not make such an investment gain at the cost of those which do.

The Sugar Enquiry Commission recommended 5 cost schedules for five zones and fixation of prices for these zones with a special price for Assam. However, taking account of large variations in duration and recovery in the larger five zones suggested by the Commission, the Government used these cost schedules in 1965-66 and 1966-67 for fixing prices for 23 smaller zones. The fixation of prices on the basis of 23 zones was challenged by some factories before the Delhi High Court. The petition was dismissed by the High Court, but leave for appeal to the Supreme Court has been granted. With the introduction of partial control in 1967-68, the Government decided to fix levy prices of sugar for the five zones recommended by the Sugar Enquiry Commission. Representations have again been received from some of the factories against the fixation of prices on the basis of the five zones. Some factories have filed writ petitions in High Courts on this ground.

Another point urged is that the Government should encourage an efficient system of harvesting and quicker transport of sugarcane from the fields to the sugar factories. The issue which will naturally arise from this suggestion is whether provision for harvesting and transport from the field should be allowed in the sugar price by fixing the price of sugarcane ex-field instead of ex-factory-gate as at present.

3. In view of the above the Government of India are of the opinion that a fresh examination of the cost structure of sugar and the preparation of new cost schedules to determine the fair price payable to the sugar industry are necessary. The Tariff Commission should accordingly be requested, under section 12 (d) of the Tariff Commission Act, 1951, to enquire in this behalf and submit its report/recommendation to the Government as early as possible, but not later than 9 months from the date of this Resolution. In formulating its recommendations, the Commission is requested *interalia* specifically to enquire into the following points :—

(i) Should the classification of factories into zones be according to the recommendations of the Sugar Enquiry Commission and, if not, on what other considerations? What part crushing capacity of a factory should play in this classification? What should be the zones into which the factories should be grouped, having regard to the basis of classification which may now be recommended by the Tariff Commission?

(ii) While preparing the cost schedules for price fixation, the Commission might recommend the basis on which the provision for depreciation should be made: Whether depreciation to be allowed in the cost structure should be calculated on replacement value or on the written down values of assets and how individual factories which modernise their plant or expand their capacities should be compensated for the investment made?

(iii) Whether provision should de made in the price to compensate units situated in an area which, under free market conditions, would have an inherent advantage over units in other areas due to higher productivity and better efficiency? If so, what should be the provision?

(iv) Whether to encourage organised and efficient system of harvesting and quick transport of sugarcane from the fields to the factories, ex-field price for sugarcane should be fixed and provided for in the price of sugar ?

(v) Whether and to what extent incentives should be given to compensate factories for the loss in recovery of sugar from sugarcane due to early start or working late into the hot weather?

(vi) How far the mechanism of price fixation can be used to induce growers to supply cane to sugar factories regularly irrespective of fluctuations in gur and khandsari prices?

4. Firms or persons interested in the matter, who desire that their views would be considered, should address their representations to the Secretary, Tariff Commission, C.G.O. Building, 101, Queen's Road, Bombay-20.

ORDER

ORDERED that a copy of the Resolution be communicated to all concerned and that it be published in the Gazette of India.

(Sd.) B. N. BANERJI,
Special Secretary to the Government of India.

APPENDIX 2

(*Vide* Paragraph 1.3)

List of firms, bodies and Government Departments to whom Commission's questionnaires/letters were issued and those who replied or sent memoranda.

* Indicates those who replied or sent memoranda.

† Indicates those who are not interested.

A PRODUCERS

Gujarat

1. Shree Khedut Sahakari Khand Udyog Mandali Ltd., Sardar Bag, Bardoli Distt., Surat.
*2. The Sahakari Khand Udyog Mandali Ltd., Gandevi, Via Bilimora, Distt. Bulsar.
3. Shree Bileshwar Khand Udyog Khedut Sahakari Mandli Ltd., Kodinar, Distt. Amreli.

Maharashtra

*4. The Saswad Mali Sugar Factory Ltd., P. O. Malinagar, Distt. Sholapur.
*5. The Brihan Maharashtra Sugar Syndicate Ltd., P. O. Shreepur, Distt. Sholapur.
6. Yeshwant Sahakari Sakhar Karkhana Ltd., P. O. Akluj, Distt. Sholapur.
7. The Ravalgaon Sugar Farm Ltd., P. O. Ravalgaon, Distt. Nasik.
8. Girna Sahakari Sakhar Karkhana Ltd., P. O. Dabhadi, Tal. Malegaon, Distt Nasik.
9. Niphad Sahakari Sakhar Karkhana Ltd., P. O. Bhausaheb Nagar, Distt. Nasik.
10. The Godavari Sugar Mills, Ltd. P. O. Sakarwadi, Distt. Ahmednagar.
11. The Godavari Sugar Mills Ltd., P. O. Lakshmiwadi, Distt. Ahmednagar.
*12. Shree Changdeo Sugar Mills Ltd., P. O. Changdeo Nagar, Distt. Ahmednagar.
13. The Maharashtra Sugar Mills Ltd., P. O. Tilaknagar, Distt. Ahmednagar.
*14. The Kopergaon Sahakari Sakhar Karkhana Ltd., P. O. Kolpewadi, Distt. Ahmednagar.
15. The Belapur Co. Ltd., P. O. Harigaon, Distt. Ahmednagar.
*16. The Pravara Sahakari Sakhar Karkhana Ltd., P. O. Pravaranagar, Distt. Ahmednagar.
*17. Ashok Sahakari Sakhar Karkhana Ltd., Ashoknagar, P. O. Shrirampur, Distt. Ahmednagar.
18. Ganesh Sahakari Sakhar Karkhana Ltd., Ganeshnagar, P. O. Ranjangaon Khurd, Distt. Ahmednagar.
*19. The Sanjivani (Takli) Sahakari Sakhar Karkhana Ltd., P. O. Kopargaon, Distt. Ahmednagar.
*20. The Rahuri Sahakari Sakhar Karkhana Ltd., Shrishivajinagar, P. O. Rahuri Factory, Distt. Ahmednagar.
21. The Shrigonda Sahakari Sakhar Karkhana Ltd, Shrigonda, P. O. Balvandi, Distt. Ahmednagar.
*22. The Bogawati Sahakari Sakhar Karkhana Ltd., P. O. Shahunagar, Distt. Kolhapur.

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23. The Kolhapur Sugar Mills Ltd., Kasaba Bavada, P. O. Kolhapur, Distt. Kolhapur.
*24. Shree Panchganga Sahakari Sakhar Karkhana Ltd., P. O. Ichalkaranji, Distt. Kolhapur.
*25. Shree Warana Sahakari Sakhar Karkhana Ltd., P. O. Waranagar, Distt. Kolhapur.
*26. Kumbi-Kesari Sahakari Sakhar Karkhana Ltd., P. O. Koparde, Distt. Kolhapur.
*27. Dudhganga-Vedganga Sahakari Sakhar Karkhana Ltd., Bidri, P. O. Mouninagar, Distt. Kolhapur.
*28. Walchandnagar Industries Ltd., P. O. Walchandnagar, Distt. Poona.
*29. Shri Shhatrapati Shivaji Sahakari Sakhar Karkhana Ltd., P. O. Bhawaninagar, Distt. Poona.
*30. The Malegaon Sahakari Sakhar Karkhana Ltd., P. O. Malegaon B. K. Distt. Poona.
*31. Shree Someshwar Sahakari Sakhar Karkhana Ltd., P. O. Nira, Distt. Poona.
32. Ganapur Sugar Mills Ltd., P. O. Raghunathanagar, Distt. Aurangabad.
*33. Krishna Sahakari Sakhar Karkhana Ltd., Rethare Budruk, P.O. Shivanagar, Distt. Satara.
*34. Shriram Sahakari Sakhar Karkhana Ltd., P. O. Phaltan, Distt. Satara.
*35. The Phaltan Sugar Works Ltd., P. O. Sakharwadi, Distt. Satara.
*36. Shetkari Sahakari Sakhar Karkhana Ltd., P. O. Sangli, Distt Sangli.
*37 Terna Shetkari Sakhar Karkhana Ltd., Post Dhoki, Distt. Osmanabad.

Mysore

*38. The Ugar Sugar Works Ltd., P. O. Ugar Khurd, Distt. Belgaum.
*39. Shri Hiranyakeshi Sahakari Sakhar Karkhana Niyamit, Sankeshwar, Distt. Belgaum.
*40. The India Sugars & Refineries Ltd., Hospet, Distt. Bellary.
*41. The Bellary Central Co-operatives Stores, Sugar Factory, Kampli P. O., Distt. Bellary.
*42. The Salar Jung Sugar Mills Ltd., Munirabad, Distt. Raichur.
*43. Pandavapura Sahakari Sakhar Karkhna Ltd., Pandavapura, Distt. Mandya.
*44. Tungbhadra Sugar Works (Pvt.) Ltd., Shimoga, Distt. Shimoga.
45. Gauribidanur Sahakari Sakhar Karkhana Ltd., Gauribidanur, Distt. Kolar.
*46. The Mysore Sugar Co. Ltd., Mandya, Distt. Mandya.

Andhra Pradesh

*47. The Nizam Sugar Factory Ltd., Shakarnagar, Distt. Nizambad.
*48. The Nizambad Co-operative Sugar Factory Ltd., Nizambad, Distt. Nizambad.
*49. The Chodavaram Co-operative Agricultural & Industrial Society Ltd., *Chodavaram*, Distt. Visakhapatnam.
50. Anakapalle Co-operative Agricultural & Industrial Society Ltd., *Anakapalle* P. O. Visakhapatnam Distt.
*51. The Etikoppaka Co-operative Agriculture & Industrial Society Ltd., P.O. Etikoppaka, Distt. Viskhapatnam.
*52. The Thandava Co-operative Agricultural & Industrial Society Ltd., P.O. Payakaraopeta, Distt. Visakhapatnam.
*53. Shri Rama Sugars & Industries Ltd., Seethanagaram, Distt. Srikakulam.
*54. Sri Rama Sugars & Industries Ltd., Bobbili, Distt. Srikakulam.

55. Amadalavalasa Co-operative Agricultural & Industrial Society Ltd., Amadalavalas P. O. Distt. Srikakulam.
*56. The Kirlampudi Sugar Mills Ltd., Pithapuram, Distt. East Godavari.
*57. Sri Sarvaraya Sugars Ltd., Chelluru, Via Ramachandrapuram, Distt. East Godavari.
*58. The Deccan Sugar & Abkhari Co. Ltd., P. O. Samalkot, Distt. East Godavari.
*59. The Andhra Sugars Ltd., Tanuku, Distt. West Godavari.
*60. The Palakol Co-operative Agricultural & Industrial Society Ltd., Palakol, Distt. West Godavari.
*61. V. V. S. Sugars (The Jeypore Sugar Co. Ltd.,) P. O. Chagallu, Distt. West Godavari.
62. Sivakami Sugars Ltd., Tanuku, Distt. West Godavari.
*63. The K. C. P. Ltd., Vuyyuru, Distt. Krishna.
64. Challapalli Sugars Ltd., P. O. Challapalli, Distt. Krishna.
*65. The Chittoor Co-operative Sugars Ltd., Chittoor, Distt. Chittoor.

Tamil Nadu

*66. The Deccan Sugar & Abkhari Co Ltd., P. O. Pugalur Sugar Factory, Distt. Tiruchirapalli.
*67. Cauvery Sugars & Chemicals Ltd., Cauvery Factory, Pettaivayatalai, Distt. Tiruchirapalli.
*68. Kothari Sugars & Chemicals Ltd., Kattur, Railway Station Lalgudi, Distt. Tiruchirapalli.
*69. E. I. D. Parry Ltd., Nellikuppam P. O., Distt. South Arcot.
*70. The South India Steel & Sugars Ltd., Mundiyampakkam, Villupuram Taluk, Distt. South Arcot.
*71. Aruna Sugars Ltd., Pennadam, Distt. South Arcot.
*72. Kallakurichi Co-operative Sugar Mills Ltd., P. O. Moongilthuripattu, Kallakurichi Taluk, Distt. South Arcot.
73. The Madura Sugars & Allied Products Ltd., Pandiarajapuram P. O., Distt. Madurai.
74. The National Co-operative Sugar Mills Ltd., A-2731, Alanganallur Post, Distt. Madurai.
*75. The Thiru Arooran Sugars Ltd., P. O. Vadapathimangalam, Tanjore.
*76. Amaravathi Co-operative Sugar Mills Ltd., A. K. Puthur P. O., Via Kaniyur, Distt. Coimbatore.
*77. The Sakthi Sugars Ltd., P. O. Appakudal, Distt. Coimbatore.
*78. North Arcot Distt. Co-operative Sugar Mills Ltd., Vadapudupe, Ambur P. O., Distt. North Arcot.
*79. The Madurantakam Co-operative Sugar Mills Ltd., P. O. Padalam, Distt. Chingleput.
*80. The Salem Co-operative Sugar Mills Ltd., Mahanur, Via Karur (Namakkal Taluk), Distt. Salem.

Kerala

*81. The Travancore Sugars & Chemicals Ltd., Pamba River Factory, Tiruvalla P. O., Distt. Quilon.
*82. The Mannam Sugar Mills Co-operative Ltd., No. 4324, Pandalam P. O., Distt. Alleppey.
*83. The Co-operative Sugars Ltd., Chittur P. .O. Menonpara, Distt. Palghat.

Pondichery

*84. New Horizon Sugar Mills Co. Ltd., Sacrur (Ariour), Pondicherry.

Orissa

*85. Jeypore Sugar Co. Ltd., Rayagada, Distt. Koraput.
*86. The Aska Co-operative Sugar Industries Ltd., P. O. Aska, Distt. Ganjam.

U. P. (West)

*87. The Modi Sugar Mills (Prop. The Modi Industries Ltd.) Modinagar, Distt. Meerut.
*88. Ram Laxman Sugar Mills , P. O. Mohiuddinpur, Distt. Meerut.
89. Jaswant Sugar Mills Ltd., Meerut City, Distt. Meerut.
*90. Daurala Sugar Works, Daurala, Distt. Meerut.
*91. Diwan Sugar & General Mills Private Ltd., Diwannagar, P. O. Sakhoti—Tanda, Distt. Meerut.
*92. Mawana Sugar Works, Mawana, Distt. Meerut.
*93. The Bagpat Co-operative Sugar Mills Ltd., Bagpat, Distt. Meerut.
94. The Simbhaoli Sugar Mills Pvt. Ltd., P. O. Simbhaoli, Distt. Meerut.
95. The Upper India Sugar Mills Ltd., Khatauli, Distt. Muzaffarnagar.
*96. Sir Shadi Lal Sugar & General Mills Ltd., Mansurpur, Distt. Muzaffarnagar.
*97. The Amritsar Sugar Mills Co. Ltd., Rohanakalan, P. O. Rohana Mills, Distt. Muzaffarnagar.
*98. The Upper Doab Sugar Mills Ltd., Shamli, Distt. Muzaffarnagar.
*99. Shri Janki Sugar Mills & Co., Doiwala, Distt. Dehradun.
*100. The Ganga Sugar Corporation Ltd., Deoband, Distt. Saharanpur.
*101. The Lord Krishna Sugar Mills Ltd., Saharanpur, Distt. Saharanpur.
*102. Kisan Co-operative Sugar Factory Ltd., P. O. Sarsawa, Distt. Saharanpur.
*103. Rai Bahadur Narain Singh Sugar Mills Pvt. Ltd., Lhaksar, Distt. Saharanpur.
*104. The Mahalakshmi Sugar Mills Co. Ltd., Iqbalpur P. O., Distt. Saharanpur.
*105. Shiv Prasad Banarsidas Sugar Mills, Bijnor, Distt. Bijnor.
106. Upper Ganges Sugar Mills Ltd., Seohara, Distt. Bijnor.
*107. The Dhampur Sugar Mills Ltd., P. O. Dhampur, Distt. Bijnor.
108. The Ajudhia Sugar Mills, P. O. Raja-ka-Sahaspur, Distt. Moradabad.
109. Kundan Sugar Mills, Amroha, Distt. Moradabad.
*110. Raza Buland Sugar Co. Ltd., P. O. Rampur, Distt. Rampur.
*111. H. R. Sugar Factory Pvt. Ltd., Bareilly, Distt. Bareilly.
*112. The Kesar Sugar Works Ltd., Baheri, Distt. Bareilly.
*113. Rosa Sugar Works of Carew & Co. Ltd., Rosa, Distt. Shahjahanpur.
*114. L. H. Sugar Factories & Oil Mills Pvt. Ltd., Pilibhit, Distt. Pilibhit.
*115. The Kisan Co-operative Sugar Factory Ltd., Majhola, Distt. Pilibhit.
*116. L. H. Sugar Factories & Oil Mills Pvt. Ltd., Kashipur, Distt. Nainital.
*117. The Bazpur Co-operative Sugar Factory Ltd., Bazpur, Distt. Nainital.
*118. The Neoli Sugar Factory, Manpurnagaria, P. O. Neoli, Distt. Etah.
*119. The Oudh Sugar Mills Ltd., Hargaon, Distt. Sitapur.
*120. The Lakshmiji Sugar Mills Pvt. Ltd., Maholi, Distt. Sitapur.
*121. The Seksaria Biswan Sugar Factory Pvt. Ltd., Biswan, Distt. Sitapur.

*122. The Hindusthan Sugar Mills Ltd., Golagokarannath, Distt. Kheri.
*123. The Govind Sugar Mills Ltd., P. O. Aira Estate, Distt. Kheri.
*124. The Lakshmi Sugar & Oil Mills Ltd., Hardoi, Distt. Hardoi.
*125. The Pannijee Sugar & General Mills Co., Panninagar, Distt. Bulandshahr.

Punjab :

*126. The Morinda Co-operative Sugar Mills Ltd., Morinda, Distt. Ambala.
*127. The Jagatjit Sugar Mills Co. Ltd., Phagwara, Distt. Kapurthala.
*128. The Malwa Sugar Mills Co. Ltd., Dhuri, Distt. Sangrur.
*129. The Janta Co-operative Sugar Mills Ltd., Bhogpur P. O., Distt. Jullundur.
*130. The Batala Co-operative Sugar Mills Ltd., Batala, Distt. Gurdaspur.

Haryana :

*131. The Saraswati Sugar Mills, P. O. Yamunanagar, Distt. Ambala.
*132. The Haryana Co-operative Sugar Mills Ltd., P. O. Rohtak, Distt. Rohtak.
*133. The Panipat Co-operative Sugar Mills Ltd., P. O. Panipat, Distt. Karnal.

Rajasthan :

*134. The Mewar Sugar Mills Ltd., Bhupalsagar, Distt. Udaipur.
*135. The Ganganagar Sugar Mills Ltd., Sri Ganganagar P. O. Distt. Sri Ganganagar.

Madhya Pradesh :

*136. The Gwalior Sugar Co. Ltd., P. O. Dabra, Distt. Gwalior.
*137. The Jaora Sugar Mills Pvt. Ltd., Jaora, Distt. Ratlam.
138. Seth Govindram Sugar Mills, P. O. Mehidpur Road, Distt. Ujjain.
*139. The Jiwaji Roa Sugar Co. Ltd., Dalauda, Distt. Mandsaur.
*140. The Bhopal Sugar Industries Ltd., Sehore, Distt. Sehore.

U. P. (East) :

*141. The United Provinces Sugar Co. Ltd., Seorahi P. O., Distt. Deoria.
*142. Shree Sitaram Sugar Co. Ltd., Baitalpur P. O., Distt. Deoria.
*143. Cawnpore Sugar Works Ltd., Gauri Factory Branch, P. O. Gauribazar, Distt. Deoria.
*144. Deoria Sugar Mills Ltd., Deoria, Distt. Deoria.
145. The Shankar Sugar Mills Ltd., Captainganj, Distt. Deoria.
146. The Vishnu Pratap Sugar Works (Pvt.) Ltd., P. O. Rajabazar Khadda, Distt. Deoria.
*147. Lakshmi Devi Sugar Mills Pvt. Ltd., Chhitauni, Distt. Deoria.
148. The Ishwari Khetan Sugar Mills Ltd., Lakshmiganj, Distt. Deoria.
*149. The Ramkola Sugar Mills Co. Ltd., Ramkola, Distt. Deoria.
150. The Maheshwari Khetan Sugar Mills Pvt. Ltd., P.O. Ramkola, Distt. Deoria.
*151. Cawnpore Sugar Works Ltd., Padrauna Factory Branch, P. O. Padrauna, Distt. Deoria.
*152. Cawnpore Sugar Works Ltd., Kathkuiyan Factory Branch, P. O. Kathkuiyan, Distt. Deoria.
*153. The Purtabpore Co. Ltd., P. O. Mairwa, Distt. Deoria.
154. Kamlapat Motilal Bhatni (Sugar Mills), Branch, P. O. Bhatni, Distt. Deoria.
*155. Saraya Sugar Mills Pvt. Ltd., Sardarnagar, Distt. Gorakhpur.

*156. Diamond Sugar Mills Ltd., Pipraich, Distt. Gorakhpur.
157. The Punjab Sugar Mills Co. Ltd., Ghughli, Distt. Gorakhpur.
*158. Mahabir Sugar Mills Pvt. Ltd., P. O. Siswa Bazar, Distt. Gorakhpur.
*159. The Ganesh Sugar Mills Co. Ltd., P. O. Anandnagar, Distt. Gorakhpur.
160. The Madho Mahesh Sugar Mills Pvt. Ltd., P. O. Munderwa, Distt. Basti.
*161. The Basti Sugar Mills Co. Ltd., P. O. Walterganj, Distt. Basti.
*162. The Basti Sugar Mills Co. Ltd., Basti., Distt. Basti.
*163. Shree Anand Sugar Mills Ltd., Khalilabad, Distt. Basti.
164. The Seksaria Sugar Mills Pvt. Ltd., P. O. Babhnan, Distt. Gonda.
*165. The Nawabganj Sugar Mills Co. Ltd., P. O. Sugar Factory, Nawabganj, Distt. Gonda.
*166. Balrampur Sugar Co. Ltd., Balarmpur Factory Branch, Balrampur P. O. Distt. Gonda.
*167. Tulsipur Sugar Co. Ltd., Tulsipur Factory Branch, Tulsipur P. O. Distt. Gonda.
*168. R. B. Lachmandas Sugar & General Mills Pvt. Ltd., P. O. Jarwal Road, Distt. Bahraich.
*169. The Burhwal Sugar Mills Co. Ltd., Burhwal, Distt. Barabanki.
*170. Ramchand & Sons Sugar Mills Pvt., Barabanki, Distt. Barabanki.
*171. The Ratna Sugar Mills Co. Ltd., Shahganj, Distt. Jaunpur.
*172. Kamlapat Motilal, Motinagar (Sugar Mills) Branch, P. O. Motinagar, Distt. Faizabad.

North Bihar

*173. Lohat Sugar Works of the Durbhanga Sugar Co. Ltd., Lohat P. O., Distt. Darbhanga.
*174. Sakri Sugar Works of the Durbhanga Sugar Co. Ltd., Sakri P.O., Distt. Darbhanga.
*175. New India Sugar Mills Ltd., Hassanpur Road, P.O. Hassanpur Sugar Mills, Distt. Darbanga.
*176. Ryam Sugar Co. Ltd., Ryam Factory P. O., Distt. Darbanga.
*177. Samastipur Central Sugar Co. Ltd., Samastipur Factory Branch, P. O. Samastipur, Distt. Darbhanga.
*178. Belsund Sugar Co. Ltd., Righa P. O., Distt. Muzaffarpur.
179. The Motipur Sugar Factory Pvt. Ltd., Motipur, Distt. Muzaffarpur.
180. The Sitalpore Sugar Works Ltd., P. O. Garul, Distt. Muzaffarpur.
*181. Shree Hanuman Sugar & Industries Ltd., Motihari, Distt. Champaran.
*182. Motilal Padampat Sugar Mills Co. Pvt. Ltd., Majhaulia, Distt. Champaran.
*183. Champaran Sugar Co. Ltd., Chanpatia Factory Branch, P. O. Champatia, Distt. Champaran.
*184. Shree Krishna Gyanoday Sugar Ltd., Lauriya P. O., Distt. Champaran.
*185. North Bihar Sugar Mills Ltd., Bagaha, P. O. Naraipur, Distt. Champaran.
*186. The New Swadeshi Sugar Mills Ltd., Narkatiaganj, Distt. Champaran.
*187. Harinagar Sugar Mills Ltd., P. O. Harinagar, Distt. Champaran.
*188. The Sugauli Sugar Works Pvt. Ltd., P. O. Sugauli, Distt. Champaran.
*189. Champaran Sugar Co., Ltd., Barrah Factory Branch, P. O. Barachakia, Distt. Champaran.
*190. New Savan Sugar Mills, P. O. Siwan, Distt. Saran.
191. The Behar Sugar Works Branch of the Industrial Corporation Ltd., Pachrukhi, Distt. Saran.

*192. Shree Krishna Gyanoday Sugar Ltd., Hathua, P. O. Mirganj Distt. Saran.
*193. Bharat Sugar Mills Ltd., Sidhwalia P. O., Distt. Saran.
*194. Cawnpore Sugar Works Ltd., Marhowrah Factory Branch, Marhowrah P. O., Distt. Saran.
195. Sasa Musa Sugar Works Pvt. Ltd., Sasa Musa P. O., Distt. Saran.
*196. The Vishnu Sugar Mills Ltd., P. O. Vishnu Sugar Mills, Gopalganj, Distt. Saran.
*197. Shri Krishna Gyanoday Sugar Ltd., P. O. Siwan, Distt. Saran.

South Bihar

*198. Guraru Chini Mills, P. O. Guraru Mills, Distt. Gaya.
199. Mohini Sugar Mills Ltd., P. O. Warisaliganj, Distt. Gaya.
*200. South Bihar Sugar Mills Ltd., Bihta, Distt. Patna.
201. Rohtas Industries Ltd., P. O. Dalmianagar, Distt. Shahabad.

West Bengal

*202. The Ramnugger Cane & Sugar Co. Ltd., Plassey P. O., Distt. Nadia.

Assam

203. The Assam Co-operative Sugar Mills Ltd., P. O. Barua Bamungaon, Sub-Division Golaghat, Distt. Sibsagar.

B. PRODUCERS' ASSOCIATION

*1. Indian Sugar Mills Association, India Exchange, India Exchange Place, Calcutta-1.
*2. Deccan Sugar Factories Association, Stadium House, Churchgate, Bombay-1.
*3. Madras State Federation of Co-op. Sugar Factories Ltd., 89, Poonamalle High Road, Madras-1.
*4. Joint East and Bihar Sugar Factories Committee, 23A-Netaji Subhas Road, 4, Commercial Building, Calcutta-1.
*5. The Mysore State Co-op. Sugar Factories Federation, No. 37, (Upstairs) Nehru Circle, Seshadvipuram, Bangalore-20.
*6. National Federation of Co-op. Sugar Factories Ltd., 34 (2nd Floor) South Patel Nagar, New Delhi-8.
*7. Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd., 12, Morvi House, 28, Goa Street, Fort, Bombay-1.
*8. Punjab State Federation of Co-operative Sugar Mills Ltd., 17, Bays Building, Sector 17, Chandigarh.
*9. Gujarat Rajya Sahakari Udyog Sangh Ltd., P. O. Sardar Bag, Bardoli, (Distt. Surat), W. Rly.
*10. U. P. Co-operative Sugar Factories Federation Ltd., 9-A, Rana Pratap Marg, Lucknow.
*11. Indian Sugar Mills Association, Exhibition Road, Post Box No. 3, Patna-1.
*12. Indian Sugar Mills Association, East U. P. Branch, Golghar, Gorakhpur.
*13. Madhya Pradesh Sugar Mills Association, 104, Jail Road, Indore-3.
*14. Indian Sugar Mills Association, West U. P. Branch, Banerjee Building, B-21 Asaf Ali Road, New Delhi.

C. CANE GROWERS' ASSOCIATION

1. All India Cane Growers' Federation, 5, Jhandewalan Elstate, Rani Jhansi Road, New Delhi.

*2. The U. P. Co-operative Cane Unions Federation, 12-Rana Pratap Marg, Lucknow.

3. Andhra Sugarcane Growers' Association, Himavatnagar, Hyderabad, (Andhra Pradesh).

*4. Deccan Plantations Ltd., 317, Narshi Mehta Street, Bombay.

5. The President, South Indian Sugarcane Growers' Association, 12-Avenue Road, Nungambakkam, Madras-6.

*6. The President, Sugarcane Growers' Association, Bodhan (Hyderabad Dn.) (A. P.)

7. Bihar State Cane Growers Co-operative Association Ltd., Patna.

8. Hyderabad Pradesh Sugarcane Growers' Association, Shakarnagar, Andhra Pradesh.

9. The Farmers' Union, Kashipur, Uttar Pradesh.

10. Tiruchi Sugarcane Growers' Association, Pugalpur, Tiruchi Distt.

11. Pampa-valley Suarcane Growers' Association, Valanjavattom, Tiruvalla.

*12. Maharashtra State Farming Corporation, Bombay.

D. MERCHANTS' ASSOCIATION

1. Bengal Sugar Merchants' Association, 161-1, Mahatma Gandhi Road, Calcutta.

*2. The Cawnpore Sugar Merchants' Association, 51-57, Collectorganj, Kanpur.

*3. Bombay Sugar Merchants' Association Ltd., 104-114, Frere Road, Bombay-9.

4. The Jain Sanatan Sikh Grain Chamber Ltd., Muzaffarnagar, (U.P.)

@5. The Vishnu Exchange Ltd., Delhi.

*6. The Kesarganj Beopar Co. Ltd., Meerut, (Uttar Pradesh).

7. Bareilly Vyapar Mandal, Bareilly, (Uttar Pradesh).

8. The Jullundur Beopar Co. Ltd., Jullundar (Punjab).

@9. The Upper India Sugar Exchange Ltd., Collectorganj, Kanpur.

*10. The Vijai Beopar Chamber Ltd., Muzaffarnagar.

11. The Bareilly Chamber of Commerce Ltd., Bareilly.

12. The Chamber of Colours and Chemicals Ltd., 6376-Naya Bans, Delhi-6.

13. The Punjab Exchange Ltd., Delhi.

E. SUGAR CONSUMERS' ASSOCIATION

*1. The Secretary, The Indian Confectionery Mfg. Association, 192, A, Clive Street, Calcutta.

2. The Secretary, All India Food Preservers' Association, 8B, Chakraberi Road, Calcutta-20.

3. The Secretary, All India Food Preservers' Association, 18A, Aurangzeb Road, New Delhi.

*4. Fruit Product Manufacturers' Association, 8/3, Vidyasagar Street, Calcutta-9.

*5. All India Food Preservers' Association, 5 B, Chakraberia Lane, Calcutta-20.

F. FINANCE CORPORATIONS

*1. Managing Director, Punjab State Finance Corporation, 475, Modi Town, Jullunder.

*2. Managing Director, Kerala State Finance Corporation, Vellayambalam, Trivandrum-1.

*3. Managing Director, Andhra State Finance Corporation, Post Box 165, Chapol Road, Gun Foundry, Hyderabad.

*4. Managing Director, West Bengal State Finance Corporation, B-11, Mission Row Extension, 5th Floor, Calcutta-11.

*5. Managing Director, Assam State Finance Croporation, Glenerquahrt House, Near Ward Lake, Shillong.

*6. Managing Director, U. P. State Finance Corporation, 7/154, Farook Nagar, Kanpur.

*7. Managing Director, Bihar State Finance Corporation, Fraser Road, Patna.

*8. Managing Director, Rajasthan State Finance Corporation, Mirza Ismail Road, Post Box No. 63, Jaipur.

*9. Managing Director, Madhya Pradesh State Finance Corporation, Shivavilas Palace, Rajwada Chowk, Indore.

*10. Managing Director, Orissa State Finance Corporation, Killa Maidan, Cuttack.

*11. Managing Director, Industrial Credit & Investment Corporation, Indian Bank Building, Apollo Street, Bombay-1.

*12. Managing Director, Industrial Finance Corporation of India, Reserve Bank Building, Parliament Street, New Delhi.

*13. Managing Director, Bombay State Finance Corporation, United India Building, Sir P. M. Road, Bombay.

*14. National Industrial Development Corporation, Udyog Bhavan, Maulana Azad Road, New Delhi.

G. GOVERNMENT DEPARTMENTS

*1. Chief Secretary to the Government of Uttar Pradesh, Lucknow.

2. Chief Secretary to the Government of Bihar, Patna.

*3. Chief Secretary to the Government of Maharashtra, Bombay.

4. Chief Secretary to the Government of Rajasthan, Jaipur.

*5. Chief Secretary to the Government of Andhra Pradesh, Hyderabad.

*6. Chief Secretary to the Government of Madras, Madras.

*7. Chief Secretary to the Government of Mysore, Bangalore.

*8. Chief Secretary to the Government of Punjab, Chandigarh.

9. Chief Secretary to the Government of Madhya Pradesh, Bhopal.

10. Chief Secretary to the Government of Orissa, Bhubaneshwar.

11. Chief Secretary to the Government of West Bengal, Calcutta.

*12. Chief Secretary to the Government of Kerala, Trivandrum.

*13. Chief Secretary to the Government of Gujarat, Ahmedabad.

*14. Chief Secretary to the Government of Haryana, Chandigarh.

15. Chief Secretary to the Government of Assam, Sillong.

*16. Director General of Commercial Intelligence and Statistics, 1, Council House Street, Calcutta.

*17. Secretary, Resional Office Sugar Cane Development, Indian Central Sugar Committee, 19-20 , Rohtak Road, Delhi.

*18. Director, Indian Standards Institution, Manak Bhawan, 9, Mathura Road, New Delhi.

*19. Director, National Sugar Institute, Nawabganj, Kanpur.

*20. Chief Director, Directorate of Sugar & Vanaspati, Ministry of Food and Agriculture, Community Development & Co-operation, New Dlhi.

*21. Director, Indian Institute of Sugaracane Research, R Branch Road, Lucknow.

*22. Central Public Health Engg., Research Institute, Nagpur.

*23. The Secretary, Development Council for Sugar, Ministrv of Food, Agriculture, Community Development and Cooperation, (Department of Food) Directorate of Sugar and Vanaspati, Jamnager House New Delhi.

*24. Cane Commissioner, Government of Bihar, Patna.

*25. The Cane Commissioner, Government of Uttar Pradesh, Lucknow.

*26. Cane Commissioner, Government of Punjab, Chandigarh.

*27. Joint Dirctor (Agriculture) and Additional Cane Commissioner, Government of Madhya Pradesh, Bhopal.

*28. The Secretary, Planning Commissioner, Yojana Bhavan, New Delhi.

*29. Khadi and Village Industries Commission, Irla Road, Vile Parle (West), Bombay-56.

*30. The Secretary, Central Board of Direct Taxes, Ministry of Finance, New Delhi

*31. The Central Board of Excise & Customs, Ministry of Finance, Department of Revenue and Insurance, North Block-I, New Delhi.

*32. The Director, Forest Research Institute, Dehradun.

*33. The Director, Sugarcane Research Institute, Pusa (Darbhanga Distt.).

*34. The Director, Cane Breeding Institute, Coimbatore.

35. The Economic & Statistical Adviser, Ministry of Food & Agriculture, Community Development & Cooperation, Department of Agriculture, Krishi Bhuvan, New Delhi.

*36. Secretary to the Govt. of India, Ministry of Food, Agriculture Community Development & Co-operation, Krishi Bhuvan, New Delhi.

H. SUGAR TECHNOLOGIST'S ASSOCIATION

*1. Sugar Technologist's Association of India, Kalyanpur, Kanpur.

*2. South Indian Sugarcane and Sugar Technologists Association, Madras-1.

I. OTHERS

*1. Shri Manubhai N. Amersey, C/o. Amersey Damodar, Felthan House, Graham Road, Ballard Estate, Bombay-1.

*2. Shri R. Balagopalan, Chief Coffee Marketing Officer, Coffee Board Building, Vidhan Soudha Road, Bangalore-1.

*3. Shri R. S. Phoolka, Chairman, Punjab State Federation of Cooperation Mills, Sector-17, 17, Bays Building, Chandigarh.

*4. Shri Mahavir Prasad R. Morarka, 24-3, Carmicheal Road, Bombay 26.

*5. Shri R. G. Padalkar, Bharat Multi Services, Techno Division, Hotel Jeevan, Tilak Road, Poona-2.

*6. Shri Ramragbir, Satara Sahakari Sakhar Karhana Ltd., Bhuinj, Distt. Satara.

*7. Shri S. N. Gundu Rao, British India Corporation, Civil Lines, Kanpur.

*8. All India Distrillers' Association H-37, Connought Circus, New Delhi.

*9. Delhi Cloth & General Mills Co., Delhi.

J. INDIAN EMBASSIES/ HIGH COMMISSIONS ABROAD

*1. The First Secretary (Commerical) Embassy of India, 6 & 8, Ulitise Obukaa Moscow. (U.S.S.R.)

*2. The Counsellor (Commercial), Deputy Consul General, Consulate General of India, 3 East, 64th Street, New Yourk, N. Y. 10021, (U.S.A.).

*3. Indian Trade Commissioner, Caltex House, 10th Floor, 167-187, Kent Street, Sydeny, (Australia).

*4. The Counsellor (Commercial), Embassy of India, 262, Keblenzer Stresse Bonn, (West Germany).

*5. First Secretary (Commercial), Embassy of India, No. 2 Rue Godot De—manroy, Paris, (France).

6. First Secretary, (Commercial), Embassy of India, 16, Niegolewskiego, Warsaw, (Poland).

*7. First Secretary to the Embassy of India, Rua Baraodo, Flamengo 22, Aptos 801 and 802, Rio-de-Janeiri, (Brazil).

*8. Charge D Affairs, Embassy of India, Havana (Cuba).

9. Second Secretary to the the Embassy of India, Tennyson 67, Col Polanco, Mexido, D. F., Mexico City, Mexico.

10. First Secretary (Commercial), Embassy of India, 44, Kabon Serih, Djakarta (Indonesia).

11. Second Secretary(Commercial) Embassy of India, 1256, Jerge C. Bocobo St. Malate, Manila (Phillipines).

12. High Commission for India, Frere Felix de Valois Street, Port Louis, Mauritius.

APPENDIX 3

(*Vide* **Paragraph 1.3.1**)

List of factories visited by the Commission and its Officers.

Sl. No.	Name of the factory/Department visited	Date of visit	By whom visited
1	2	3	4
1	Kesar Sugar Works Ltd., Bareilly (U.P.).	12-8-1968	Shri M. Zaheer, Member.
2	Someshwar Sahakari Sakhar Karkhakhana, Nira, Distt. Poona.	10-11-68	Prof. K. T. Merchant, Member.
3	Phalton Sugar Works Ltd., Sakharwadi.		
4	Shriram Sahakari Sakhar Karkhana Ltd., Phaltan.		
5	Walchandnagar Industries Ltd.., Walchandnagar.		
6	Maha rashtra State Farming Corporation, Walchandnagar.	11-11-68	
7	National Sugar Institute, Kanpur. .	21-11-68	
8	Modi Sugar Mills, Modinagar .	14-12-68	Shri B. N. Banerji, Chairman.
9	National Sugar Institute, Kanpur .	16-12-68	Shri B. N. Banerji, Chairman and Shri M. Zaheer, Member.
10	Shankar Sugar Mills Ltd., Captainganj, Deoria.	17-12-68	
11	Maheshwari Khetan Sugar Mill Ltd., Ramkola.		
12	Ramkola Sugar Mills Co. Ltd., Ramkola.		
13	Saraya Sugar Mills Pvt. Ltd., Sardarnagar.	18-12-68	Shri B. N. Banerji, Chairman.
14	Ratna Sugar Mills, Shahganj . .	27-12-68	Shri M. Zaheer, Member.
15	Daurala Sugar Works, Daurala .	7-5-1969	Shri B. N. Banerji, Chairman.
16	Mawana Sugar Works, Mawana. .	7-5-69	
17	Saraswati Sugar Mills Ltd., Yamunanagar.	8-5-1969	Shri B. N. Banerji, Chairman.
18	Janta Cooperative Sugar Mills, Bhogpur.	10-5-1969	
19	Panipat Cooperative Sugar Mills Ltd., Panipat.	12-5-1969	
20	Bhopal Sugar Industries Ltd., Sehore.	14-5-1969	
21	National Sugar Institute, Kanpur .	16-12-1968	Shri U. K. Keswani, Assistant Director.
22	Shankar Sugar Mills Ltd., Captainganj, Deoria.	17-12-1968	
23	Maheshwari Khetan Sugar Mills Pvt. Ltd., Ramkola.		
24	Ramkola Sugar Mills Pvt. Ltd., Ramkola.		
25	Saraya Sugar Mills Pvt. Ltd., Sardarnagar.		

1	2	3	4
26	National Sugar Institute, Kanpur	2-3-1969	Shri R. P. S. Verma, Director (Investigation)
27	Daurala Sugar Works, Daurala	7-5-1969	Shri A. K. Roy, Sugar Assessor.
28	Mawana Sugar Works, Mawana		
29	Saraswati Sugar Mills Ltd., Yamunanagar.	8-5-1969	
30	Janata Cooprative Sugar Mills, Bhogpur.	10-5-1969	
31	Bhopal Sugar Industries Ltd., Sehore.	14-5-1969	Shri R. P. S. Verma, Director (Investigation).

APPENDIX 4

(*Vide* Paragraph 1.3.2)

List of factories selected for Cost investigation and the names of Cost Accounts Officers who costed these units

Maharashtra	Visited by
1. Shree Chhatrapathi Shivajee Sahakari Sakhar Karkhana Ltd., Bhavaninagar, Poona.	Shri S. R. Mallya, C.A.O.
2. Belapur Co. Ltd., Harigaon, Ahmednagar	Shri A. K. Banerji, C.A.O.
3. Brihan Maharashtra Sugar Syndicate Ltd., Shreepur, Dist. Sholapur.	Shri S. R. Mallya, C.A.O.
4. Kumbi Kesari Sahakari Sakhar Karkhana Ltd., Kuditre, Dist. Kolhapur.	Shri A.K. Ganguli, A.C.A.O.
5. Godavari Sugar Mills, Lakshmiwadi, Via Kopargaon, Distt. Ahmednagar.	Shri A. K. Banerji, C.A.O.
6. Gangapur Sugar Mills, Raghunathnagar, Gangapur Taluk, Aurangabad.	Do.
7. Rahuri Sahakari Sakhar Karkhana Ltd., Shri Shivajinagar, Distt. Ahmednagar.	Do.
8. Dudhganga Ved-Ganga Sahakari Sakhar Karkhana Ltd., Bidri, Kolhapur.	Shri A. K. Ganguli, A.C.A. O.
9. Ganesh Sahakari Sakhar Karkhana Ltd., Ganeshnagar, Rajanagaon Khurd, Distt. Ahmednagar.	Shri A. K. Banerji, C.A.O.
10. Pravara Sahakari Sakhar Karkhana Ltd., Pravaranagar, Distt. Ahmednagar.	Do.
11. Sethkari Sahakari Sakhar Karkhana Ltd., Sangli.	Shri S. R. Mallya, C.A.O.
Gujarat	
12. Sahakari Khand Udyog Mandal, Gandevi, Surat	Shri S. R. Mallya, C.A.O.
Andhra Pradesh	
13. Kirlampudi Sugar Mills, Ltd., Pithapuram—East Godavari.	Shri R. Viswanathan, A.C. A.O.
14. Etikoppaka Sugar Factory, Daralapudi, Visakhapatnam.	Shri A. K. Ganguli, A.C.A. O.
15. Amadalvalasa Co-operative Agricultural and Industrial Society Ltd., Amadalvalasa—Srikakulam.	Do.
16. Palakol Co-operative Agricultural & Industrial Society Ltd., Palakol—West Godavari.	Shri R. Viswanathan, A.C. A.O.
17. V.V.S. Sugars, Chagallu—West Godavari	Do.
18. Sri Rama Sugars & Industries, Sithanagaram, Distt. Srikakulam.	Shri A. K. Ganguli, A.C.A. O.
19. K.C.P. Ltd., Sugar Factory Vuyyuru, Krishna	Shri R. Viswanathan, A.C. O.
Mysore	
20. Ugar Sugar Works Ltd., Ugar-Khurd, Distt. Belgaum.	Shri S. R. Mallya, C.A.O.
21. Tungbhadra Sugar Works Pvt. Ltd., Harige Shimoga-Taluk.	Do.

22. Bellary Central Co-operative Stores Ltd., Kampli (Mysore).	Shri S. R. Mallya, C.A.O.
Madras	
23. North Arcot District Co-operative Surgar Mills Ltd. Ambur—North Arcot.	Shri R. Vishwanathan, A. C.A.O.
24. Amravathi Co-operative Sugar Mills Ltd., Krishnapuram—Distt. Coimbatore.	Do.
25. Thiru Arooran Sugar Ltd., Vadapathimangalam, Tanjore.	Do.
26. Aruna Sugars Ltd., Pennadam, South Arcot.	Do.
27. Sakthi Sugar, Appakundal, Distt. Coimbatore	Shri V.S.S. Rajan, S.C.A.O.
Kerala	
28. Tranvancore Sugars & Chemicals Ltd., Pamba River Factory, Tiruvalla, Alleppy.	Shri S. R. Mallya, C.A.O.
Orissa	
29. Aska Co-operative Sugar Industries Ltd., Aska—Distt. Ganjam.	Shri A. K. Ganguli, A.C. A.O.
Punjab	
30. Janta Co-operative Sugar Mills Ltd., Bhogpur, Distt. Jullundur.	Shri R. P. Brahma, C.A.O.
31. Malwa Sugar Mills Co. Ltd., Dhuri, Distt. Sangrur	Do.
Haryana	
32. Haryana Co-operative Sugar Mills Ltd., Rohtak	Shri G. C. Santra, A.C.A.O.
M.P.	
33. Gwalior Sugar Co. Ltd., Dabra, Gwalior	Shri R. Viswanathan, A.C. A.O.
Rajasthan	
34. Mewar Sugar Mills Ltd., Bupalsagar—Distt. Chitorgarh.	Shri C. Radhakrishnamurthy, Cost Accountant.
Uttar Pradesh (East)	
35. Basti Factory of the Basti Sugar Mills Co. Ltd., Basti (Distt. Basti).	Shri G. C. Santra, A.C.A.O.
36. Ramchand & Sons Sugars Mills Pvt. Ltd., Barabanki (Distt. Barabanki).	Shri R. P. Brahma, C.A.O.
37. Mahabir Sugar Mills Pvt. Lt.. Siswa Bazar (Distt. Gorakhpur).	Do.
38. United Provinces Sugar Co. Mills Ltd., Seorahi, Deoria.	Shri A. K. Banerji, C.A.O.
39. Balrampur Sugar Co. Ltd., Balrampur (Distt. Gonda).	Shri G.C. Santra, A.C.A.O.
40. Cawnpore Sugar Mills, Padrauna (Distt. Deoria)	Shri R. P. Brahma, C.A.O.
41. Tulsipur Sugar Co., Tulispur (Distt. Gonda)	Shri G. C. Santra, A.C.A.O.
42. Purtapore Sugar Factory, Mairwa (Distt. Deoria)	Shri A. K. Banerji, C.A.O.

43.	Ramkola Sugar Mills, Ramkola (Pb.) (Distt. Deoria)	Shri A. K. Banerji, C.A.O.
44.	Ganesh Sugar Mills Ltd., Anandnagar, Distt. Gorakhpur.	Shri G. C. Santra, A.C.A.O.

West U. P.

45.	Ram Lakshman Sugar Mills, Mohiuddinpur—Distt. Meerut.	Shri R. P. Brahma, C.A.O.
46.	Shree Janki Sugar Mills, Doiwala, Distt. Dehra-Dun	Shri G.C. Santra, A.C.A.O.
47.	Rosa Sugar Works & Distillery, Rosa—Distt. Shahjahanpur.	Shri S. R. Mallya, C.A.O.
48.	Seksaria Biswan Sugar Factory Pvt. Ltd., Biswan-Distt. Sitapur.	Shri G. C. Santra, A.C.A.O.
49.	Neoli Sugar Factory, Neoli—Distt. Etah. .	Shri R. P. Brahma, C.A.O.
50.	Lakshmiji Sugar Mills Co. Pvt. Ltd., Maholi, Distt. Sitapur.	Shri G. C. Santra, A.C.A.O.
51.	Daurala Sugar Works, Daurala, Distt. Meerut .	Shri V.S.S. Rajan, S.C.A.O.
52.	Bazpur Co-ope. Sugar Factory Ltd., Bazpur—Distt. Nainital.	Shri G. C. Santra, A.C.A.O.
53.	Kesar Sugar Factory Ltd., Baheri—Distt. Barielly	Do.
54.	Simbhaoli Sugar Mills Pvt. Ltd., Simbhaoli—Distt. Meerut.	Shri R. P. Brahma, C.A.O.
55.	Raza—Bulund Sugar Co., Rampur . . .	Shri R. P. Brahma C.A.O.
56.	Upper Doab Sugar Mills Ltd. Shamli, Muzzafarnagar.	Do.
57.	Hindustan Sugar Mills Ltd., Golagokarnath—Distt. Kheri.	Shri S. R. Mallya, C.A.O.

Bihar

58.	North Bihar Sugar Mills, Naraipur—Distt. Champaran.	Shri N. C. Ghosh, A.C.A.O.
59.	New Savan Sugar & Gur Refinery Co. Ltd., Siwan, Distt. Saran.	Do.
60.	South Bihar Sugar Mills, Bihta—Distt. Patna .	Shri S. R. Mallya, C.A.O.
61.	New India Sugar Mills Ltd., Hassanpur Road—Distt. Darbhanga.	Shri N. C. Ghosh, A.C.A.O.
62.	Sasa-Musa Sugar Works Pvt. Ltd., Sasa-Musa—Distt. Saran.	No cost data furnished by the company despite reminders.
63.	Belsund Sugar Co. Ltd., Righa—Distt. Muzzaffarpur	Shri N.C. Ghosh, A.C.A.O.
64.	Shree Hanuman Sugar & Industries Ltd., Motihari—Distt. Cahmparan.	Do.
65.	Chmparan Sugar Co. Ltd., Chanpatia—Distt. Champaran.	Do.
66.	S. K. G. Sugar Ltd., Mirganj—Distt. Saran .	Do.
67.	Vishnu Sugar Mills, Gopalganj—Saran . .	Do.

Assam

68.	Assam Co-operative Sugar Mills Ltd., Barua Bamun Gaon, Distt. Sibsagar.	Shri A. K. Banerji, C.A.O.

APPENDIX 5

(*Vide* Paragraph 1.3.2)

Actual cane crushing capacity, production, percentage recovery of sugar and duration during 1966-67 in respect of units selected for costing.

Sl. No.	Name of the unit	Actual cane crushing capacity per day in 1966-67 Tonnes	Production 1966-67 Tonnes	Duration in 1966-67	Percentage recovery of sugar in 1966-67
1	2	3	4	5	6
	Uttar Pradesh				
1	Basti	934	5781	65	10.42
2	Barabanki	229	5970	72	9.80
3	Siswa-Bazar	821	10580	143	9.84
4	Sehorai	1152	12378	119	9.85
5	Balrampur	1065	6462	67	9.89
6	Padrauna	1275	13403	118	9.71
7	Tulsipur	1114	9739	95	10.02
8	Purtabpore	1061	8529	89	9.81
9	Ramkola (Pb.)	2065	23379	122	10.14
10	Anandnagar	1077	8274	84	9.97
11	Mohiuddinpur	940	2972	39	8.80
12	Doiwala	732	8836	139	9.47
13	Rosa	907	5126	66	9.40
14	Biswan	955	7193	82	9.98
15	Neoli	1287	8474	73	9.80
16	Maholi	1395	10250	82	9.76
17	Daurala	1455	10832	90	9.07
18	Bazpur	1467	15845	118	9.97
19	Baheri	1553	16242	116	9.85
20	Simbhaoli	2144	8561	49	8.95
21	Raza Buland	2457	13611	63	9.67
22	Shamli	2558	15175	78	8.29
23	Gola	4071	49707	138	9.67
	Bihar				
24	Bagha	945	11459	132	9.99
25	New Savan	886	4794	62	9.54
26	Bihta	813	2292	37	8.34
27	Hassanpur	1177	8541	78	10.12

1	2	3	4	5	6
28	Sasa-Musa	1095	9629	100	9.56
29	Righa	1075	6703	66	10.29
30	Gopalganj	1219	10734	98	9.80
31	Motihari	1186	9934	70	9.80
32	Chanpatia	1113	12066	115	10.33
33	S. K. G. Siwan	726	4816	76	9.52
	Punjab				
34	Bhogpur	1135	9163	112	7.88
35	Dhuri	909	6723	94	8.57
	Haryana				
36	Rohtak	1152	7472	88	8.04
	Madhya Pradesh				
37	Dabra	695	2058	35	9.16
	Rajasthan				
38	Bhupalsagar	859	1993	26	9.85
	Assam				
39	Barua Bamangaon	893	6477	85	9.30
	Orissa				
40	Aska	879	5136	74	8.65
	Maharashtra				
41	Sansar	1208	16555	135	11.04
42	Harigaon	1355	23221	167	11.16
43	Brihan Maharashtra	1201	11736	97	11.01
44	Kumbi-Kesari	1395	17712	117	11.83
45	Lakshmiwadi	1226	23362	195	10.64
46	Gangapur	1019	13933	134	11.13
47	Rahuri	1171	23166	185	11.64
48	Bidri	1361	19379	128	12.14
49	Ganeshnagar	1128	19848	175	10.96
50	Pravaranagar	1575	28548	179	11.02
51	Sangli	1976	34505	163	11.72
	Andhra Pradesh				
52	Kirlampudi	883	3181	47	8.3
53	Daralampudi	985	5940	80	8.24
54	Amdalvalasa	1003	3766	41	10.03
55	Palakol	1181	8876	91	9.05
56	Chagallu	1108	15239	163	9.20

1	2	3	4	5	6
57	Bobbili	753	3289	57	8.41
58	Vuyyuru	2927	30632	135	8.45
	Tamil Nadu				
59	Ambur	922	11849	145	9.66
60	Amravathi	803	4947	78	8.58
61	Thiru	1128	11685	130	8.70
62	Aruna	1229	10639	100	9.40
63	Sakthi	1117	13655	155	8.60
	Mysore				
64	Ugar Khurd	1268	19009	138	11.84
65	Shimoga	976	7479	77	10.87
66	Kampli	937	10325	113	10.60
	Gujarat				
67	Gandevi	594	4370	87	9·24
	Kerala				
68	Tiruvalla	869	6779	110	7·77

APPENDIX 6

(*Vide* Paragraph 1.3.3)

List of persons who attended the Commission's Public Inquiry on 31-10-1968 *and on* 1-11-1968.

Name	Representing
1	2
Producers/Producers' Association:	
1. Shri D. C. Kothari	Indian Sugar Mills Association, Calcutta.
2. ,, R. P. Nevatia	Ditto.
3. ,, M. N. Pittie	Ditto.
4. ,, D. D. Puri	Ditto.
5. ,, J. J. Mulji	Ditto.
6. ,, Lala Bansidhar	Ditto.
7. ,, J. S. Mehta	Ditto.
8. ,, S. L. Jain	Ditto.
9. ,, R. P Mishra	Ditto.
10. ,, Vimal Jain	Ditto.
11. ,, J. C. Aurora	Ditto.
12. ,, K. K. Kanoria	Ditto.
13. ,, G. C. Goel	Ditto.
14. ,, Jayantilal	Ditto.
15. ,, N. Nageswaran	Ditto.
1. Shri H. R. Kamani	Indian Sugar Mills Association, East U. P. Branch.
2. ,, S. R. Bhawsingka	Ditto.
3. ,, V. D. Jhunjhuwala	Ditto.
4. ,, M. D. Khetan	Ditto.
5. ,, Dayaram	Ditto.
6. ,, Kashi Prasad	Ditto.
7. ,, K. N. Saraogi	Ditto.
8. ,, B. P. Khetan	Ditto.
9. ,, S. N. Gundu Rao	Ditto.
10. ,, B. M. Thapar	Ditto.
1. Shri M. L. Bajoria	Indian Sugar Mills Association, Bihar Branch.
2. ,, M. Nopani	Ditto.
3. ,, D. K. Acharya	Indian Sugar Mills Association, West U. P. Branch.

1	2
1. Shri Vasantraoji Patil .	Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd.
2. ,, V. A. Kore	Ditto.
3. ,, V. P. Naidu . . .	Ditto.
4. ,, J. K. Bhosale . . .	Ditto.
5. ,, M. S. Marathe . . .	Ditto.
6. ,, M. G. Tambe . . .	Ditto.
7. ,, S. S. Hiremath . . .	Ditto.
1. Shri S. L. Limaye . . .	Deccan Sugar Factories Association.
2. ,, B. Gulabchand	Ditto.
3. ,, R. Venkataraman . .	Ditto.
4. ,, S. D. Morarka . . .	Ditto.
5. ,, M. L. Apte . . .	Ditto.
1. Shri L. G. Patel	Gujarat Rajya Sahakari Khand Ydyog Sangh Ltd.
2. ,, R. N. Vala . . .	Ditto.
3. ,, M. G. Desai . . .	Ditto.
4. ,, K. D. Pathak . . .	Ditto.
5. ,, H. Balkrishna . . .	Ditto.
1. Shri A. L. N. Moorthy . .	National Federation of Co-op. Suga Factories.
2. ,, B. R. Chaturvedi . .	Ditto.
3. ,, P. S. Rajgopal Naidu . .	Ditto.
4. Dr. D. K. Patel . . .	Ditto.
Producers :	
1. Shri M. R. Borkar . . .	Belapur Co. Ltd.
2. ,, M. R. Morarka . . .	India Sugar & Refineries Ltd., Hospet.
3. ,, N. S. Pradhan . . .	Ditto.
4. ,, Sundaram	Thiru Arooram Sugar Ltd.
5. ,, B. K. Seshu . . .	Nizam Sugar Factory.
6. ,, S. N. Rohatgi . . .	The Seksaria Biswan Sugar Factory.
7. ,, Dina Nath	The Saraswati Sugar Mills.
8. ,, T. K. Joshi . . .	Sahakari Khand Udyog Mandal Ltd.
9. ,, Shrinivasan . . .	Salar Jung Sugar Mills Ltd.
10. ,, K. K. Tope . . .	Jiwajirao Sugar Co. Ltd.
Sugar Consumers' Association :	
1. Dr. D. S. Patel . . .	All India Food Preservers' Association, New Delhi.

1	2	3
Finance Corporation :		
1. Shri	M. S. Nagratha . . .	Industrial Finance Corp. of India.
2. ,,	M. G. Gupta . . .	I. F. C. I.
3. ,,	Arun Shah	I. C. I. C. I.
Merchant's Association :		
Shri	M. P. Jun	Bengal Sugar Merchant's Association, Calcutta.
Government Departments :		
1. Shri	R. L. Nagpal . . .	Government of Maharashtra.
2. ,,	R. S. Pal	Ditto.
1. Shri	Chandan Singh . . .	Government of Uttar Pradesh.
2. ,,	Y. N. Bali	Ditto.
Shri	J. Prasad	Government of Bihar.
,,	Mani Narayanswami . .	Government of Mysore.
,,	A. K. Roy	National Sugar Institute, Kanpur.
1. Shri	S. B. L. Singhal . . .	Khadi & Village Industries Commission.
2. ,,	N. Gopinath . . .	Ditto.
,,	K. S. Subha Rao . .	Regional Office Sugarcane Development, Delhi.
,,	R. Narsimhan . . .	Sugar cane Breeding Institute, Coimbatore.
Dr.	V. Pandey	Sugar Cane Research Institute, Bihar, PUSA
1. Shri	V. Ganapalli . . .	Maharashtra State Farming Corporation, Bombay.
2. ,,	B. G. Pendse . . .	Ditto.
Press :		
1. Shri	M. G. Dhuru . . .	Economic Times, Bombay.
2. ,,	P. V. Ghodbole . . .	Commerce, Bombay.

सत्यमेव जयते

APPENDIX 6-A

List of persons who attended the Discussions

Sl. No.	Name	Representing
1	2	3
	25*th October*, 1968	
	PRODUCERS' ASSOCIATION:—*Co-operative Sector*	
1	Shri Vasantraoji Patil . .	Maharashtra Rajya Sahakari Sakhar Sangh Ltd.
2	,, V. P. Naidu . . .	Ditto.
3	,, M. S. Marathe . .	Ditto.
4	,, M. G. Tambe . . .	Ditto.
5	,, S. N. Jachak . . .	Ditto.
6	Dr. D. K. Patil . . .	National Federation of Co-operative Sugar Factories and Gujarat Rajya Sahakari Khand Udyog Sangh.
7	Shri B. H. Heshing . . .	Gujarat Rajya Sahakari Khand Udyog Sangh.
8	,, Dalbir Singh . . .	Convenor, Punjab Sugar Mills.
9	,, Sohan Singh . . .	Additional Registrar, Punjab Co-op. Society.
10	,, B. M. Thapar . . .	Malwa Sugar Mills.
11	,, A. R. Upadhya . .	Shetkari Co-operative Sugar Factory, Sangli.
	26*th October*, 1968	
	MERCHANTS' ASSOCIATION :	
1	Shri C. T. Shanghavi . .	Bombay Sugar Merchant's Association, Bombay.
2	,, A. B. Karia . . .	Ditto.
	GOVERNMENT OFFICES	
1	Shri Chandan Singh . .	Cane Commissioner, Govt. of U. P.
2	,, Yadu Nath Bali . .	Ditto.
3	,, Sham Joshi . . .	Regional Office, Sugarcane Development, New Delhi.
4	,, R. L. Nagpal . . .	Joint Director of Agriculture, Government of Maharashtra.
5	,, G. K. Patwardhan . .	Chief Sugarcane, Development Office Maharashtra State, Poona.
6	,, J. Prasad . . .	Cane Commissioner, Bihar.
7	,, K. K. Moghe, I.A.S. .	Managing Director, Maharashtra State Farming Corporation Ltd. Bombay.

1	2	3
8	Shri V. Ganapati, . . .	Assistant Accounts Officer, Maharashtra State Farming Corporation Ltd., Bombay.
28th October, 1968		
CONSUMERS' ASSOCIATIONS		
1	Dr. D. S. Patel . . .	All India Food Preservers' Association.
2	Shri Mohan Lal . . .	All India Confectionery Manufacturers' Association, Calcutta.
30th October, 1268.		
PRODUCER'S ASSOCIATIONS : *Joint Stock Sector*		
1	Shri D. C. Kothari—President .	Indian Sugar Mills Association.
2	,, M. D. Khaitan . .	Ditto.
3	,, B. M. Thapar . . .	Ditto.
4	,, R. P. Nevatia . . .	Ditto.
5	,, S. N. Gundu Rao . .	Ditto.
6	,, D. D. Puri . . .	Ditto.
7	,, Jayantilal J. Mulji . .	Ditto.
8	,, Bansi Dhar . . .	Ditto.
9	,, R. P. Mishra . . .	Ditto.
10	,, M. N. Pittie . . .	Ditto.
11	,, J. S. Mehta . . .	Ditto.
12	,, S. L. Jain . . .	Ditto.
13	,, Vimal Jain . . .	Ditto.
14	,, K. K. Kanoria Vice-President	Indian Sugar Mills Association, East U. P. Branch.
15	,, Daya Ram . . .	Ditto.
16	,, B. P. Khetan . . .	Ditto.
17	,, V. D. Jhunjhunwala . .	Ditto.
18	,, K. N. Saraogi . .	Ditto.
19	,, Mahadeo Prasad . .	Ditto.
20	,, J. C. Aurora . . .	Ditto.
21	,, M. L. Bajoria—President .	Indian Sugar Mills Association Bihar Branch.
22	,, M. Nopani . . .	Ditto.
23	,, G. C. God . . .	Ditto.
24	,, S. L. Limaye—President	Deccan Sugar Factories Association.
25	,, Bahubali Gulabchand .	Ditto.
26	,, S. K. Somaiya . .	Ditto.
27	,, M. L. Apte . . .	Ditto.
28	,, S. D. Morarka . . .	Ditto.
29	,, R. Venkataraman . .	Ditto.
30	,, D. K. Acharya . .	H. R. Sugar Factory, Bareilly.

APPENDIX 7

[*Vide* paragraph 2·1].

Statewise distribution of working sugar factories since 1950-51

State	1950-51	1955-56	1960-61	1963-64	1964-65	1965-66	1966-67	1967-68
A. SUB-TROPICAL								
1. Uttar Pradesh	68	68	71	70*	70*	71*	71*	71*
2. Bihar	29	28	28	28	29	29	29	27
3. Punjab	3	4	6	5	5	5	5	5
4. Haryana				3	3	3	3	3
5. Madhya Pradesh	5	5	5	4	5	5	4	3
6. West Bengal	1	1	2	1	1	1	1	1
7. Rajasthan	2	3	2	2	2	2	2	2
8. Assam	..	..	1	1	1	1	1	1
TOTAL : A	108	109	115	114	116	117	116	113
B. TROPICAL :				..	..	..	..	
9. Maharashtra	13	14	27	33	32	32	33	34
10. Andhra Pradesh	8	9	11	18@	19@	19@	19@	19@
11. Tamil Nadu	4	4	8	10	12	14	15	15
12. Mysore	4	4	8	8	8	9	8	9
13. Gujarat	..	1	2	3	3	3	3	4
14. Kerala	1	1	1	2	3	3	3	3
15. Orissa	1	1	1	2	2	2	2	2
16. Pondicherry	..	..	1	1	1	1	1	1
TOTAL : B	31	34	59	77	80	83	84	87
GRAND TOTAL OF A & B (ALL INDIA)	139	143	174	191	196	200	200	200

Figures given under years 1950-51, 1955-56 and 1960-61 relate to composite Punjab.

*Raza and Buland are taken as one unit.

@Nizam I and II are taken as one unit.

Source : (i) Directorate of Sugar & Vanaspati.
(ii) Sugar Enquiry Commission Report.

APPENDIX 8

[*Vide* paragraph 2·2]

Distribution of sugar factories during 1967-68 *according to size measured in terms of the daily installed cane crushing capacity.*

State	Below 750 tonnes	750 & below 1000 tonnes	1000 & below 1250 tonnes	1250 & below 1500 tonnes	1500 & below 1750 tonnes	1750 & below 2000 tonnes	2000 & below 2250 tonnes	2250 & below 2500 tonnes	2500 & above	Total
SUB-TROPICAL :										
Uttar Pradesh	1	5	23	7	13	7	4	2	9	71
Bihar	2	5	9	4	4	3	1	1	..	29
Punjab	..	..	4	1	..	..	..	..	..	5
Haryana	..	..	..	1	1	..	..	..	1	3
Assam	..	1	..	..	..	..	..	..	..	1
Rajasthan	..	..	2	..	..	..	..	..	..	2
West Bengal	..	..	1	..	..	..	..	..	..	1
Madhya Pradesh	..	2	1	2	..	..	..	..	..	5
TROPICAL :										
Maharashtra	..	2	14	4	7	3	2	..	3	35
Gujarat	..	..	1	1	2	..	..	..	..	4
Mysore	..	..	1	2	3	1	1	..	1	9
Kerala	1	..	2	..	..	..	..	..	..	3
Andhra Pradesh	2	2	6	1	4	..	..	..	4	19
Tamil Nadu	..	1	5	4	2	1	2	..	..	15
Orissa	1	..	1	..	..	..	..	..	..	2
Pondicherry	..	..	..	..	1	..	..	..	..	1
TOTAL	7	18	70	27	37	15	10	3	18	205@

@Figures are inclusive of 5 units which have not worked during 1967-68.

Source : Directorate of Sugar & Vanaspati.

APPENDIX 9

(*Vide* Paragraph 2.6)

Statewise licensed and installed capacity of the sugar industry from 1950-51 *to* 1967-68 (In Lakh tonnes)

State	Present Annual Sugar production capacity (licensed)	Annual Sugar Production Capacity (Installed)							
		1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
SUB-TROPICAL									
Uttar Pradesh	14.18	8.55*	8.55	8.55	8.55	8.77	8.80	9.12	9.35
Bihar	4.50	3.43	3.43	3.43	3.43	3.43	3.45	3.45	3.52
Punjab@@	0.82	0.45**	0.45	0.45	0.45	0.23	0.46	0.85	0.75
Haryana	0.85	..	..	..	..	..	..	..	..
West Bengal	0.22	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Rajasthan	0.37	0.13	0.13	0.13	0.13	0.13	0.19	0.13	0.19
Assam	0.10	..	..	..	..	..	..	..	..
Madhya Pradesh	0.72	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Nagaland	0.12	..	..	..	..	..	..	..	..
TROPICAL									
Maharashtra	10.05	1.63	1.63	1.63	1.63	1.63	2.06	2.23	3.06
Gujarat	1.49	..	..	..	..	..	0.06	0.13	0.13
Mysore	2.98	0.41	0.41	0.41	0.41	0.41	0.49	0.59	0.86
Tamil Nadu	3.45	0.50	0.50	0.50	0.50	0.50	0.68	0.68	0.84
Andhra Pradesh	3.97	1.03	1.03	1.03	1.03	1.03	1.03	1.17	1.37
Kerala	0.31	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Orissa	0.35	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Pondicherry	0.23	..	..	..	..	..	..	..	..
All India	44.69	16.68	16.68	16.68	16.68	16.68	17.77	18.90	20.62

*It excludes a capacity of 0.22 lakh tonnes which worked in Punjab in 1950-51 but shifted to U. P. in 1954-55.

@It includes a capacity of 0.06 lakh tonnes lying idle at Ahmedpur since 1964-65.

**It includes a capacity of 0.22 lakh tonnes which worked in Punjab in 1950-51 but shifted to U. P. in 1954-55.

@@Figures include capacity figures of Haryana till 1963-64.

[*Source* : Directorate of Sugar and Vanaspati].

States	Annual Sugar Production Capacity (Installed)									
	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
SUB-TROPICAL										
Uttar Pradesh	9.79	9.85	10.23	10.37	10.57	11.18	11.73	12.63	12.89	13.04
Bihar	3.52	3.52	3.57	3.59	3.59	3.67	3.84	3.85	3.93	3.93
Punjab@@	0.75	1.04	0.04	1.04	1.19	1.30	0.63	0.63	0.63	0.63
Haryana	..	..	..	..	..	..	0.67	0.67	0.69	0.69
West Bengal	0.10	0.17	0.17	0.17	0.22	0.22	0.22@	0.22@	0.22@	0.22@
Rajasthan	0.13	0.13	0.13	0.13	0.13	0.13	0.19	0.19	0.22	0.22
Assam	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Madhya Pradesh	0.36	0.36	0.36	0.41	0.41	0.41	0.46	0.46	0.46	0.48
Nagaland	..	..	..	..	..	..	..	..	..	..
TROPICAL										
Maharashtra	3.92	4.28	4.44	4.44	4.92	5.50	5.67	5.88	6.37	6.75
Gujarat	0.28	0.28	0.28	0.45	0.45	0.45	0.45	0.45	0.53	0.79
Mysore	0.86	0.98	1.19	1.19	1.19	1.19	1.29	1.48	1.61	1.61
Tamil Nadu	0.84	0.97	1.25	1.25	1.44	1.60	2.01	2.35	2.61	2.68
Andhra Pradesh	1.42	1.44	1.44	1.75	2.37	2.45	2.61	2.67	2.85	2.86
Kerala	0.06	0.06	0.06	0.06	0.06	0.18	0.31	0.31	0.31	0.31
Orissa	0.03	0.03	0.03	0.03	0.03	0.18	0.18	0.18	0.18	0.20
Pondicherry	..	..	0.18	0.18	0.18	0.18	0.18	0.18	0.10	0.18
All India	22.16	23.21	24.47	25.16	26.85	28.74	30.54	32.25	33.78	34.69

*It excludes a capacity of 0.22 lakh tonnes which worked in Punjab in 1950-51 but shifted to U. P. in 1954-55.

@It includes a capacity of 0.06 lakh tonnes lying idle at Ahmedpur since 1964-65.

**It includes a capacity of 0.22 lakh tonnes which worked in Punjab in 1950-51 but shifted to U. P. in 1954-55.

@@Figures include capacity figures of Haryana till 1963-64.

[*Source* : Directorate of Sugar and Vanaspati].

APPENDIX 9A

(*Vide* Paragraph 2·6)

Basis of conversion of daily cane crushing capacity in terms of annual sugar production capacity

	Average duration (days)	Recovery Per cent cane
Northern Region—		
Uttar Pradesh, Bihar, Punjab, West Bengal, Assam, Rajasthan, Madhya Pradesh and Orissa . . .	140	9·50
Western Region—		
Maharashtra and Gujarat	150	11·50
Southern Region—		
(i) GROUP I		
Tamil Nadu, Mysore and Pondicherry . . .	175	9.50
(ii) GROUP II		
Andhra Pradesh and Kerala	140	9·50

[*Source:*—Directorate of Sugar and Vanaspati].

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APPENDIX 10

[*Vide* paragraph 2·9]

State-wise distribution of working sugar factories in 1950-51, 1955-56, 1960-61, 1965-66 *and* 1967-68

(Number)

State	1950-51			1955-56			1960-61			1965-66			1967-68		
	Co-op.	Others	Total	Co-op.	Others	Total	Co-op.	Others	Total	Co-op.	Others	Total	Co-op.	Others	Total
A. SUB-TROPICAL :															
1. Uttar Pradesh	..	68	68	..	68	68	2	69	71	4	67	71	4	67	71
2. Bihar	..	29	29	..	28	28	..	28	28	..	29	29	..	27	27
3. Punjab	..	3	3	..	4	4	3	3	6	3	2	5	3	2	5
4. Haryana	..	..	..	..	..	..	..	..	..	2	1	3	2	1	3
5. Madhya Pradesh	..	5	5	..	5	5	..	5	5	..	5	5	..	3	3
6. Rajasthan	..	2	2	..	3	3	..	2	2	..	2	2	..	2	2
7. West Bengal	..	1	1	..	1	1	..	2	2	..	1	1	..	1	1
8. Assam	..	..	..	..	..	..	1	..	1	1	..	1	1	..	1
TOTAL : A	..	108	108	..	109	109	6	109	115	10	107	117	10	103	113

B. TROPICAL :

9. Maharashtra .	1	12	13	2	12	14	14	13	27	19	13	32	22	12	34
10. Andhra Pradesh	1	7	8	1	8	9	2	9	11	8	11*	19	8	11*	19
11. Tamil Nadu .	..	4	4	..	4	4	3	5	8	5	9	14	6	9	15
12. Mysore . .	..	4	4	..	4	4	3	5	8	4	5	9	4	5	9
13. Gujarat . .	..	..	..	..	1	1	2	..	2	3	..	3	4	..	4
14. Kerala . .	..	1	1	..	1	1	..	1	1	2	1	3	2	1	3
15. Orissa . .	..	1	1	..	1	1	..	1	1	1	1	2	1	1	2
16. Pondicherry .	..	..	..	..	..	..	..	1	1	..	1	1	..	1	1
TOTAL : B .	2	29	31	3	31	34	24	35	59	42	41	83	47	40	87
TOTAL (A & B) .	2	137	139	3	140	143	30	144	174	52	148	200	57	143	200

Source (i) Sugar Enquiry Commission's Report (ii) Directorate of Sugar and Vanaspati.

*Nizam I & II are taken as one factory.

APPENDIX II

[*Vide* Paragraph 3·4]

State-wise area and production of sugarcane from 1949-50 *to* 1967-68

(Area in '000 hectares)
(Production in '000 tonnes)

	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
SUB-TROPICAL									
Uttar Pradesh									
Area	850	1014	1200	1070	798	928	1101	1241	1227
Production	26760	40030	43690	36550	28586	38989	40537	48222	42333
Percentage to the Total (area)	57·9	59·4	61·8	61·9	56·6	57·3	59·6	60·5	59·2
Percentage to the Total (production)	53·3	57·8	58·4	59·1	53·1	55·3	55·8	58·2	50·6
Bihar									
Area	153	166	136	145	121	132	153	163	152
Production	2770	4360	3410	3480	3476	3480	4131	5198	4570
Percentage to the Total (area)	10·4	9·7	7·0	8·4	8·6	8·1	8·3	7·9	7·3
Percentage to the Total (production)	5·5	6·3	4·6	5·6	6·5	4·9	5·7	6·3	5·5
Punjab									
Area	132	151	189	176	157	168	183	197	204
Production	3690	4660	5690	5170	4672	5479	5896	5710	7196
Percentage to the Total (area)	9·0	8·8	9·7	10·2	11·1	10·4	9·9	9·6	9·7
Percentage to the Total (production)	7·4	6·7	7·6	8·4	8·7	7·8	8·1	6·9	8·6

Haryana									
Area									
Production	Figures included in Punjab for year 1949-50 to 1964-65								
Percentage to the Total (area)									
Percentage to the Total (production)									
West Bengal									
Area	24	22	19	21	19	23	25	24	23
Production	920	874	838	1057	660	1212	1314	1189	860
Percentage to the Total (area)	1·6	1·3	1·0	1·2	1·3	1·4	1·4	1·2	1·1
Percentage to the Total (production)	1·8	1·3	1·1	1·7	1·2	1·7	1·8	1·4	1·0
Madhya Pradesh									
Area	38	36	42	32	27	29	40	53	47
Production	920	925	975	813	681	752	1168	1689	1195
Percentage to the Total (area)	2·6	2·1	2·2	1·9	1·9	1·8	2·2	2·6	2·3
Percentage to the Total (production	1·3	1·3	1·3	1·3	1·3	1·1	1·6	2·0	1·4
Rajasthan									
Area	16	17	25	17	16	21	26	34	34
Production	290	783	520	398	419	491	460	690	726
Percentage to the Total (area)	1·1	1·0	1·3	1·0	1·1	1·3	1·4	1·7	1·6
Percentage to the Total (production . . .	0·6	1·1	0·7	0·6	0·8	0·7	0·6	0·8	0·9

	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
TROPICAL									
Maharashtra									
Area	79	75	84	73	71	74	76	87	113
Production	5190	5009	5751	4389	4250	5294	5009	5438	8769
Percentage to the Total (area)	5·4	4·4	4·3	4·2	5·0	4·6	4·1	4·2	5·5
Percentage to the Total (production)	10·3	7·2	7·7	7·1	7·9	7·5	6·9	6·6	10·5
Andhra Pradesh									
Area	57	72	81	56	56	71	71	77	76
Production	3800	4910	5430	3860	3849	5150	5258	6293	6470
Percentage to the Total (area)	3·9	4·2	4·2	3·2	4·0	4·4	3·8	3·8	3·7
Percentage to the Total (production)	7·6	7·1	7·3	6·2	7·1	7·3	7·2	7·6	7·7
Orissa									
Area	25	24	25	25	24	24	23	24	24
Production	1130	1066	1015	995	1025	1025	933	957	957
Percentage to the Total (area)	1·7	1·4	1·3	1·4	1·7	1·5	1·2	1·2	1·2
Percentage to the Total (production)	2·3	1·5	1·4	1·6	1·9	1·5	1·3	1·2	1·1
Mysore									
Area	36	42	47	42	45	45	47	50	58
Production	1830	2380	2530	1910	2172	2760	2977	3216	3710
Percentage to the Total (area)	2·5	2·5	2·4	2·4	3·2	2·8	2·5	2·4	2·8
Percentage to the Total (production)	3·7	3·4	3·4	3·1	4·0	3·9	4·1	3·9	4·4

Tamil Nadu									
Area	31	50	51	29	32	51	49	47	58
Production	2050	3760	3800	2280	2582	4260	3970	3542	4377
Percentage to the Total (area)	2·1	2·9	2·6	1·7	2·3	3·1	2·7	2·3	2·8
Percentage to the Total (production)	4·1	5·4	5·1	3·7	4·8	6·0	5·5	4·3	5·2
Kerala									
Area	..	..	..	..	..	..	..	..	..
Production	..	..	..	..	..	..	..	..	..
Percentage to the Total (area)	..	..	..	..	..	..	..	..	..
Percentage to the Total (production)	..	..	..	..	..	..	..	..	..
Others									
Area	26	38	42	42	44	54	54	42	68
Production	820	463	1116	958	1476	1657	383	1714	2184
Percentage to the Total (area)	1·8	2·3	2·2	2·4	3·1	3·3	2·9	2·0	3·3
Percentage to the Total (production)	1·6	0·7	1·4	1·6	2·7	2·3	5·3	2·1	2·6
ALL INDIA									
Area	1467	1707	1941	1728	1410	1620	1846	2051	2072
Production	50170	69220	74760	61860	53848	70549	72692	82908	83651

Source : (i) Directorate of Economics & Statistics.
(ii) Sugar Enquiry Commission Report.

	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
SUB-TROPICAL										
Uttar Pradesh										
Area	1112	1191	1329	1363	1262	1229	1389	1490	1190	993
Production	42419	44442	54516	54516	43197	47546	56242	56650	39370	39998
Percentage to the Total (area)	57·1	55·7	55·1	55·5	56·3	54·6	54·2	53·4	51·7	48·7
Percentage to the Total(production)	49·2	48·6	49·3	49·3	47·0	45·6	47·0	47·3	42·4	41·3
Bihar										
Area	164	179	185	197	161	141	166	170	149	117
Production	6152	6751	7038	6330	4877	5165	6859	6045	4398	4031
Percentage to the Total (area)	8·4	8·4	7·7	8·0	7·2	6·3	6·5	6·1	6·5	5·7
Percentage to the Total (production)	7·1	7·4	6·4	5·7	5·3	4·9	5·7	5·1	4·7	4·2
Punjab										
Area	204	239	269	271	243	233	270	166	156	144
Production	7615	8935	10579	8870	8027	8931	11330	5770	4360	5310
Percentage to the Total (area)	10·5	11·2	11·1	11·0	10·8	10·4	10·5	6·0	6·8	7·1
Percentage to the Total (production)	8·8	9·7	0·6	8·5	8·7	8·6	9·5	4·8	4·7	5·5

Haryana										
Area	Figures included in Punjab for year 1949-50 to 1964-65.							184	151	122
Production								7170	5100	4760
Percentage to the Total (area)								6·6	6·6	5·9
Percentage to the Total (praduction)								6·0	5·5	4·9
West Bengal										
Area	27	33	40	34	31	33	41	39	30	27
Production	1193	1298	2057	1818	1355	1537	1495	1790	1300	1178
Percentage to the Total (area)	1·4	1·5	1·6	1·4	1·4	1·5	1·6	1·4	1·3	1·3
Percentage to the Total (production)	1·1	1·4	1·9	1·7	1·5	1·5	1·3	1·5	1·4	1·2
Madhya Pradesh										
Area	34	40	50	55	56	54	70	78	44	46
Production	908	1081	1359	1422	1445	1295	1792	1850	1016	1181
Percentage to the Total (area)	1·7	1·9	2·1	2·2	2·5	2·4	2·7	2·8	1·9	2·2
Percentage to the Total (production)	1·1	1·2	1·2	1·4	1·6	1·2	1·5	1·5	1·1	1·2
Rajasthan										
Area	20	28	41	32	33	30	43	57	32	20
Production	442	605	1002	790	827	576	638	940	393	312
Percentage to the Total (area)	1·0	1·3	1·7	1·3	1·5	1·3	1·7	2·1	1·4	1·0
Percentage to the Total (production)	0·6	0·7	0·9	0·8	0·9	0·6	0·5	0·8	0·4	0·3

	1958-59	1959-60	1960-61	z9-1961	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
TROPICAL										
Maharashtra										
Area	118	133	155	154	135	137	148	161	161	168
Production	9025	9368	12089	10995	10667	11513	9925	10410	9977	10673
Percentage to the Total (area)	6·1	6·2	6·4	6·3	6·0	6·1	5·8	5·8	7·0	8·2
Percentage to the Total (production)	10·5	10·3	10·9	10·6	11·6	11·0	8·3	8·7	10·7	11·00
Andhra Pradesh										
Area	74	83	91	96	91	124	145	136	108	117
Production	6790	6294	6748	7266	7217	9715	12184	10319	8033	9566
Percentage to the Total (area)	3·8	3·9	3·8	3·9	4·1	5·5	5·7	4·9	4·7	5·7
Percentage to the Total (production)	7·9	6·9	6·1	7·0	7·9	9·3	10·2	8·6	8·7	9·9
Orissa										
Area	24	24	24	25	32	41	40	47	36	29
Production : : : :	957	702	702	747	1575	1952	2003	2297	1769	1432
Percentage to the Total (area)	1·2	1·1	1·0	1·0	1·4	2·3	1·2	1·7	1·6	1·4
Percentage to the Total (production)	1·2	0·7	0·6	0·7	1·7	1·9	1·7	1·9	1·9	1·5
Mysore										
Area	59	64	72	78	74	81	79	77	77	79
Production	3765	4411	5184	5789	5810	6978	5993	6137	6931	7586
Percentage to the Total (area)	3·0	3·0	3·0	3·2	3·3	3·6	3·1	2·8	3·3	3·9
Percentage to the Total (production)	4·4	4·8	4·7	5·6	6·3	6·7	5·0	5·1	7·5	7·8

Tamil Nadu										
Area	55	59	81	76	55	73	83	86	88	95
Production	4154	4257	6311	5818	4262	5743	6480	6618	6897	7559
Percentage to the Total (area)	2·8	2·8	3·4	3·1	2·5	3·2	3·2	3·1	3·8	4·7
Percentage to the Total (production)	4·8	4·7	5·7	5·6	4·6	5·5	5·4	5·5	7·4	7·8
Kerala										
Area	..	..	..	..	9	10	10	9	9	8
Production	..	..	..	..	417	441	440	410	549	500
Percentage to the Total (area)	..	..	..	..	0·4	0·4	0·4	0·3	0·4	0·4
Percentage to the Total (production)	—	..	..	..	0·4	0·4	0·4	0·3	0·6	0·5
Others										
Area	57	64	76	75	60	63	78	80	50	72
Production	2729	3250	2959	2865	2237	2833	3817	3236	2733	4798
Percentage to the Total (area)	3·0	3·0	3·1	3·1	2·7	2·8	3·0	2·9	2·2	3·5
Percentage to the Total (production)	3·3	3·6	2·7	2·7	2·4	2·7	3·2	2·7	2·9	5·0
All India										
Area	1948	2137	2413	2456	2242	2249	2562	2780	2301	2037
Production	86149	91394	110544	103967	91913	104225	119598	119642	92826	96884

Source : (i) Directorate of Economics & Statistics.
(ii) Sugar Enquiry Commission Report.

APPENDIX 12

(*Vide* Paragraph 3·11)

Varietal area in different States in the year 1965-66 *as collected during the course of varietal census*

Sl. No.	State	Total area under sugarcane ('000 hectares)	Total area under sugarcane for which variety-wise details are available (hectares)	Variety	Area in hectares	Percentage to the total area
1	2	3	4	5	6	7
1	Uttar Pradesh .	1489·7	6,12,509	Co 312	1,26,693	20·68
				Bo 17	91,023	14·86
				CoS 510	69,246	11·31
				Bo 3	41,612	6·79
				Co 527	34,470	5·63
				Bo 32	23,546	3·84
				Co 313	21,919	3·58
				Co 341	16,869	2·75
				Co 975	16,829	2·74
				CoS 245	16,381	2·67
				Co 1148	16,251	2·65
				CoS 109	15,321	2·50
				CoS 541	13,600	2·22
				Co 395	9,650	1·58
				Co 951	8,573	1·39
				CoS 568	7,535	1·24
				Co 356	7,078	1·15
				Co 859	6,943	1·13
				Co 393	6,745	1·10
				Co 846	4,304	0·70
				Co 617	4,181	0·68
				Co 1158	3,773	0·63
				Co 1007	2,866	0·47
				Bo 14	2,365	0·39
				CoS 416	1,456	0·24
				CoS 443	1,212	0·20
				Bo 10	798	0·13
				Bo 29	710	0·12
				Bo 11	30	0·005
				CoS 321	4	0.0006
				Others	40,562	6·62

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1	2	3	4	5		6	7
2	Maharashtra .	160·7	1,53,098	Co	740	91,462	59·74
				Co	419	56,658	37·01
				Co	775	2,630	1·72
				Co	798	405	0·26
				Co	853	162	0·11
				Co	678	162	0·11
				Others		1,619	1·05
3	Bihar . .	170·0	1,70,000	Bo	32	58,174	34·22
				Bo	17	29,546	17·38
				Bo	3	26,469	15·57
				Bo	14	15,011	8·83
				Bo	29	12,342	7·26
				Bo	34	4,301	2·53
				Bo	10	4,046	2·38
				Bo	43	3,043	1·79
				Co	313	1,853	1·09
				Bo	47	1,615	0·95
				Bo	48	544	0·32
				Co	419	408	0·24
				Co	617	306	0·18
				Co	453	306	0·18
				Bo	50	153	0.09
				Co	513	85	0·05
				Bo	51	85	0·05
				Others		11,713	6·89
4	Tamil Nadu .	86·3	86,300	Co	419	67,564	78·29
				Co	449	8,673	10·05
				Co	658	6,982	8·09
				Co	785	828	0·96
				Co	997	405	0·47
				Co	853	268	0·31
				Co	849	95	0·11
				Co	740	78	0·09
				Bo	37172	9	0·01
				Co	421	43	0·05
				Others		1,355	1·57
5	Mysore . .	76·9	76,598	Co	419	62,016	80·96
				H.M.	320	2,177	2·84
				Co	290	309	0·40
				Pattapatti		546	0·72
				Pundya		60	0·08
				Others		11,490	15·00

1	2	3	4	5		6	7
6	Andhra Pradesh	135·7	119.514	Co	419	75,194	62·91
				Co	527	17,074	14·29
				Co	997	16,822	14·08
				Co	449	1,983	1·66
				Co	975	1,580	1·32
				Co	775	1,453	1·22
				Others		5,408	..
	Punjab . .	350·0	3,50,000	Co	312	1,06,610	30·46
				Co	453	29,855	8·53
				CoL	9	28,560	8·16
				CoL	29	20,790	5·94
				CoJ	39	1,365	0·39
				CoJ	46	1,015	0·29
				Others		1,61,805	46·23

Source : Regional Office Sugarcane Development

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APPENDIX 13

(*Vide* Paragraph 3.12)

Statewise yield per hectare from 1949-50 *to* 1967-68

(In tonnes)

States	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
SUB-TROPICAL									
Uttar Pradesh	31.5	39.5	36.3	34.1	35.8	42.0	36.8	38.8	34.6
Bihar	18.1	26.2	25.0	24.0	28.7	26.4	26.9	31.9	30.1
Punjab	28.0	30.9	30.1	29.4	29.9	32.6	32.1	28.9	35.6
Haryana	..	..	..	..	..	..	..	..	..
West Bengal	38.7	39.3	43.0	48.4	58.1	51.6	51.8	48.2	36.0
Madhya Pradesh . . .	24.0	25.5	23.0	25.2	25.2	26.2	28.9	32.1	25.5
Rajasthan.	18.7	20.5	20.5	23.0	25.4	22.5	17.1	20.3	21.3
TROPICAL									
Maharashtra	65.8	67.0	68.7	60.3	59.6	71.4	65.5	62.8	77.3
Andhra Pradesh . .	67.1	68.2	67.5	69.2	68.4	72.6	74.1	81.8	84.5
Orissa	44.2	43.7	40.3	39.5	41.7	42.3	40.5	39.3	39.3
Mysore	54.5	57.1	54.4	45.7	47.9	60.8	62.8	62.0	63.8
Tamil Nadu	66.7	65.6	75.6	77.1	81.8	84.3	81.0	76.1	75.6
All India	34.2	40.5	38.5	35.8	38.3	43.5	39.3	40.5	40.3

States	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
SUB-TROPICAL										
Uttar Pradesh	38.1	37.3	41.0	37.6	34.2	38.7	40.5	38.0	33.1	40.3
Bihar	37.6	37.6	38.1	32.1	30.1	36.7	41.4	35.6	29.5	34.3
Punjab	37.3	37.3	39.3	32.6	33.0	38.4	41.9	34.8	27.9	36.9
Haryana	..	..	..	..	..	..	..	38.9	33.8	39.0
West Bengal	44.0	39.0	51.4	52.9	43.4	47.1	46.1	45.5	44.1	44.1
Madhya Pradesh	26.4	26.9	27.2	25.9	25.6	24.2	25.7	23.7	23.1	25.6
Rajasthan	21.0	21.3	24.2	24.5	25.4	19.4	14.9	16.5	12.2	15.8
TROPICAL		..	..	..	..	..	..	..	..	
Maharashtra	76.4	70.4	77.8	71.4	78.9	84.0	67.2	64.8	62.2	63.4
Andhra Pradesh	91.2	76.4	73.9	75.9	79.3	78.3	83.8	76.0	74.1	81.9
Orissa	39.3	32.9	29.4	30.0	49.2	48.2	49.6	49.4	49.0	50.8
Mysore	63.8	69.4	71.7	74.6	78.3	86.3	75.9	79.8	89.8	95.5
Tamil Nadu	75.4	72.2	78.1	76.8	77.1	78.3	77.9	76.7	78.2	79.4
All India	44.2	42.7	45.7	42.3	41.0	46.4	46.7	43.0	40.3	47.6

Source : (i) Directorate of Economics & Statistics.
(ii) Sugar Enquiry Commission Report.

APPENDIX 14

(*Vide* Paragraph 3.14)

Utilisation of Sugarcane from 1950-51 to 1967-68 (Quantity in '000 tonnes)

Year	Total cane produced	Index	Utilised for sugar	Index	Percentage (Actual)	Quantity used for gur, khandsari, plant chewing etc.	Index	Percentage
1	2	3	4	5	6	7	8	9
1950-51	69220	100	11349	100	16.40	57871	100	83.60
1951-52	74760	108	15891	140	21.26	58869	102	78.74
1952-53	61860	89	13219	116	21.37	48641	84	78.63
1953-54	53848	78	10092	89	18.70	43756	76	81.30
1954-55	70549	102	16269	143	23.06	54280	94	76.94
1955-56	72692	105	19234	169	26.46	53458	92	73.54
1956-57	82908	120	21197	187	29.07	61711	107	70.93
1957-58	83651	121	20065	177	23.99	62986	109	76.01
1958-59	86149	124	19804	175	22.99	66345	115	77.01
1959-60	91394	132	24812	219	27.15	63586	115	72.85
1960-61	110544	160	31113	274	28.15	79431	137	71.85
1961-62	103967	150	27948	246	26.88	76019	131	73.12
1962-63	91913	133	20743	183	22.56	71170	123	75.29
1963-64	104225	151	25755	227	24.71	78170	136	75.44
1964-65	119598	173	33370	294	27.90	86228	149	72.10
1965-66	119642	173	36642	323	30.63	83000	143	69.37
1966-67	92826	134	21595	190	23.26	71231	123	76.24
1967-68	96884	140	22403	197	23.12	74481	129	76.88

APPENDIX 15

(*Vide* Paragraph 3.14)

State-wise utilisation of Sugarcane

(In '000 tonnes)

State	Items	1963-64		1964-65		1965-66		1966-67		1967-68	
		Qty.	Percent	Qty.	Percent	Qty.	Percent	Qty.	Percent	Qty.	Percent
1	2	3	4	5	6	7	8	9	10	11	12
Uttar Pradesh	Sugar	11625	24	13487	24	14480	26	7417	19	8336	21
	Gur, Khandsari & Others	35921	76	42754	76	42170	74	31952	81	31462	79
	Total	57546	100	56241	100	56650	100	39369	100	39998	100
Bihar	Sugar	2375	46	4146	60	3980	66	2171	49	1555	39
	Gur, Khandsari & Others	2790	54	2713	40	2065	34	2227	51	2476	61
	Total	5165	100	6859	100	6045	100	4398	100	4031	100
Punjab & Haryana	Sugar	795	9	1157	10	1859	15	951	10	949	10
	Gur, Khandsari & Others	8136	91	10173	90	11081	85	8509	90	9121	90
	Total	8931	100	11330	100	12940	100	9460	100	10070	100
West Bengal	Sugar	97	6	128	7	127	7	84	6	71	6
	Gur, Khandsari & Others	1440	94	1767	93	1663	93	1216	94	1107	94
	Total	1537	100	1895	100	1790	100	1300	100	1178	100
Madhya Pradesh	Sugar	226	17	414	23	392	21	82	8	44	4
	Gur, Khandsari & Others	1069	83	1378	77	1458	79	934	92	1137	96
	Total	1295	100	1792	100	1850	100	1016	100	1181	100

jasthan	Sugar	80	14	104	16	205	22	103	26	64	20
	Gur, Khandsari & Others	496	86	534	84	735	78	290	74	248	80
	Total	576	100	638	100	940	100	393	100	312	100
Maharashtra	Sugar	4534	39	5432	55	6874	66	5567	56	5400	51
	Gur, Khandsari & Others	6979	61	4493	45	3536	34	4410	44	5273	49
	Total	11513	100	9925	100	10410	100	9977	100	10673	100
Andhra Pradesh	Sugar	2444	25	3298	27	3189	31	1660	21	2025	21
	Gur, Khandsari & Others	7271	75	8887	73	7130	69	6373	79	7541	79
	Total	9715	100	12185	100	10319	100	8033	100	9566	100
Orissa	Sugar	70	4	100	5	133	6	102	6	60	4
	Gur, Khandsari & Others	1882	96	1903	95	2164	94	1667	94	1372	96
	Total	1952	100	2003	100	2297	100	1769	100	1432	100
Mysore	Sugar	1103	16	1752	29	1632	27	794	11	877	12
	Gur, Khandsari & Others	5875	84	4241	71	4505	73	6137	89	6709	88
	Total	6978	100	5993	100	6137	100	6931	100	7586	100
Tamil Nadu	Sugar	1664	29	2360	36	2689	41	1927	28	2142	28
	Gur, Khandsari & Others	4079	71	4120	64	3929	59	4970	72	5417	72
	Total	5743	100	6480	100	6618	100	6897	100	7559	100
Kerala	Sugar	110	25	289	66	298	73	134	24	82	16
	Gur, Khandsari & Others	330	75	151	34	112	27	415	76	418	84
	Total	440	100	440	100	410	100	549	100	500	100
Other States	Sugar	632	22	703	18	784	24	603	22	598	21
	Gur, Khandsari & Others	2202	78	3114	82	2452	76	2131	78	2200	79
	Total	2834	100	3817	100	3236	100	2734	100	2798	100
ALL INDIA	Sugar	25755	25	33370	28	36642	31	21595	23	22403	23
	Gur, Khandsari & Others	78470	75	86228	72	83000	69	71231	77	74481	77
	Total	104225	100	119598	100	119642	100	92826	100	96884	100

APPENDIX 16

(*Vide* Paragraph 3·16)

Utilisation of cane crushing capacity by sugar factories from 1963-64 *to* 1967-68

(in '000 Tonnes)

State/Year	Cane produced	Cane crushed	Percentage of cane crushed by sugar factories to total cane produced	Installed capacity for cane crushing	Percentage of capacity utilised Col. 3 to Col. 5.
1	2	3	4	5	6
SUB-TROPICAL					
Uttar Pradesh					
1963-64 . . .	47546	11625	24	13134	88·51
1964-65 . . .	56242	13487	24	13134	102·69
1965-66 . . .	56650	14480	26	13794	104·97
1966-67 . . .	39370	7417	19	14288	51·91
1967-68 . . .	39998	8536	21	14623	58·37
Punjab & Haryana					
1963-64 . . .	8931	795	9	1508	52·71
1964-65 . . .	11330	1157	10	1508	76·72
1965-66 . . .	12940	1859	14	1508	123·27
1966-67 . . .	9460	951	10	1526	62·31
1967-68 . . .	10070	949	9	1526	62·18
Bihar					
1963-64 . . .	5165	2375	46	4429	53·62
1964-65 . . .	6859	4146	60	4429	93·61
1965-66 . . .	6045	3980	66	4443	89·58
1966-67 . . .	4398	2171	49	4539	47·83
1967-68 . . .	4031	1555	39	4539	34·26
Others					
1963-64 . . .	4624*	451@@	10	1053	42·83
1964-65 . . .	5488*	712@@	13	1053	67·62
1965-66 . . .	5637*	823@@	14	1158	71·08
1966-67 . . .	3794*	338@@	9	1115	30·31
1967-68 . . .	3759*	222@@	6	1185	18·73

1	2	3	4	5	6
TROPICAL					
Maharashtra					
1963-64 . . .	11513	4534	39	5334	85·00
1964-65 . . .	9925	5432	55	5334	101·83
1965-66 . . .	10410	6874	66	5527	124·37
1966-67 . . .	9979	5576	56	5952	93·68
1967-68 . . .	10673	5400	51	6259	86·27
Andhra Pradesh					
1963-64 . . .	9715	2444	25	2937	81·82
1964-65 . . .	12184	3298	27	2987	110·41
1965-66 . . .	10319	3189	31	3051	104·52
1966-67 . . .	8033	1660	21	3077	53·94
1967-68 . . .	9566	2025	21	3132	64·65
Mysore					
1963-64 . . .	6978	1103	16	1476	74·73
1964-65 . . .	5993	1752	29	1476	118·70
1965-66 . . .	6137	1632	27	1698	96·11
1966-67 . . .	6931	794	11	1520	52·23
1967-68 . . .	7586	877	12	1520	57·69
Tamil Nadu					
1963-64 . . .	5743	1664	29	2327	71·50
1964-65 . . .	6480	2360	36	2327	101·42
1965-66 . . .	6618	2689	41	2727	98·60
1966-67 . . .	6897	1927	28	2905	66·33
1967-68 . . .	7559	2142	28	3027	70·76
Others					
1963-64 . . .	3914@	762+	19	1202	63·39
1964-65 . . .	5000@	1024+	20	1202	85·19
1965-66 . . .	4786@	116+	23	1202	92·84
1966-67 . . .	3872@	769+	20	1274	60·36
1967-68 . . .	3555@	698+	20	1489	46·87
All India					
1963-64 . . .	104225	25755	25	33450	76·99
1964-65 . . .	119598	33370	28	33450	99·76
1965-66 . . .	119642	36642	31	35108	104·36
1966-67 . . .	92826	21595	23	36196	59·66
1967-68 . . .	96884	22403	23	37300	60·06

+ Relates to Gujarat, Kerala, Orissa and Pondicherry.

@ Relates to Gujarat, Kerala, Orissa, Pondicherry and Goa, Diu & Daman.

@@ Relates to factories located in Rajasthan, Madhya Pradesh, W. Bengal and Assam.

* Relates to Rajasthan, Madhya Pradesh, W. Bengal, Assam, Nagaland, Jammu and Kashmir and Union Territories.

APPENDIX 17

(*Vide* Paragraph 4·3)

Sugar production from 1950-51 *to* 1967-68

(In '000 tonnes)

Year	Production
1950-51	11,34
1951-52	15,20
1952-53	13,18
1953-54	10,30
1954-55	16,22
1955-56	18,90
1956-57	20,74
1957-58	20,09
1958-59	19,51
1959-60	24,82
1960-61	30,29
1961-62	27,14
1962-63	21,52
1963-64	25,74
1964-65	32,28
1965-66	35,54
1966-67	21,50
1967-68	22,22

Source:—Agricultural Prices Commission Report (1968-69)
Directorate of Sugar and Vanaspati

APPENDIX 17A

(*Vide* Paragraph 4·4)

State-wise sugar production from 1960-61 *to* 1967-68

(In '000 tonnes)

State	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
1	2	3	4	5	6	7	8	9
SUB-TROPICAL								
Uttar Pradesh . . .	14,27	12,04	8,51	11,05	12,51	13,70	7,11	8,13
Bihar	3,85	3,59	1,70	2,37	3,92	3,71	2,11	1,47
Punjab*	1,22	91	62	21	32	74	35	27
Madhya Pradesh . .	35	31	34	21	37	36	8	3
Haryana . . .	..	..	..	48	66	85	48	54
Rajasthan . . .	18	16	14	7	9	18	8	6
West Bengal . . .	16	16	11	9	12	12	8	7
Assam	7	5	4	4	6	9	6	4
TROPICAL								
Maharashtra . . .	5,33	4,99	5,33	5,47	6,38	7,81	6,39	6,18
Andhra Pradesh . .	1,78	1,89	1,75	2,38	3,05	2,99	1,45	1,88
Tamil Nadu . . .	1,25	1,21	1,04	1,45	2,10	2,27	172	1,89
Mysore	1,23	1,25	1,30	1,20	1,78	1,68	88	98
Gujarat	28	34	37	42	43	55	42	47
Kerala	10	10	13	9	25	26	10	7
Orissa	3	4	4	6	8	11	9	5
Pondicherry . . .	19	10	10	15	16	11	10	9
All India . . .	30,29	27,14	21,52	25,74	32,28	35,54	21,50	22,22

*Figures upto 1962-63 relate to undivided Punjab.

Source:—Sugar Enquiry Commission Report (1965) and Directorate of Sugar and Vanaspati.

APPENDIX 17B

(*Vide* Paragraph 4·5)

Production of Sugar according to grades

Grade	Percentage production to total All India		
	1965-66	1966-67	1967-68
A 30	0·56	0·68	0·85
B 30	3·15	1·79	4·18
C 30	28·98	34·73	30·48
D 30	23·31	25·10	27·39
E 30	16·99	17·77	17·27
A 29	0·01	0·01	0·01
B 29	0·22	0·01	0·17
C 29	7·71	5·59	6·32
D 29	9·84	8·27	7·53
E 29	6·62	4·33	4·25
A 28	..	..	..
B 28	0·01	..	0·01
C 28	0·28	0·18	0·38
D 28	0·88	0·29	0·34
E 28	0.80	0·81	0.44
A 27			
B 27			
C 27			
D 27			0.02
E 27			0·06
Below I. S. S.	0·64	0.44	0.33
Total	100·00	100·00	100·00

Source:—National Sugar Institute.

APPENDIX 18

(*Vide* Paragraph 4·9)

Consumption of sugar from 1950-51 *to* 1967-68

(Figures in lakh tonnes)

Year	Consumption
1950-51	11
1951-52	12
1952-53	17
1953-54	18
1954-55	18
1955-56	20
1st Plan Average	**17**
1956-57	20
1957-68	21
1958-59	21
1959-60	21
1960-61	21
2nd Plan Average	**21**
1961-62	26
1962-63	25
1963-64	23
1964-65	24
1965-66	28
3rd Plan Average	**25**
1966-67	27
1967-68	21

Source : Sen Commission and Directorate of Sugar & Vanaspati.

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APPENDIX 19

(*Vide* Paragraph 4·11)

Per capita consumption of sugar from 1949-50 to 1967-68

	Kg. per annum
1949-50	2·7
1950-51	3·0
1951-52	3·2
1952-53	4·5
1953-54	4·9
1954-55	4·5
1955-56	5·0
1956-57	5·0
1957-58	5·1
1958-59	5·0
1959-60	4·8
1960-61	4·8
1961-62	5·7
1962-63	5·4
1963-64	5·0
1964-65	5·1
1965-66	5·7
1966-67	5·2
1967-68	4·25

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Source : Sugar Enquiry Commission Report; Directorate of Sugar & Vanaspati.

APPENDIX 20

(*Vide* Paragraph 4·11)

Statement showing the per capita consumption of sugar State-wise from 1963-64 *to* 1967-68

Sl. No.	Name of State/Union Territory	Per capita consumption of sugar (kgs/annum)				
		1963-64	1964-65	1965-66	1966-67	1967-68
1	Uttar Pradesh	3·2	3·5	4·0	3·4	2·61
2	Bihar	2·5	2·8	3·3	2·9	2·07
3	Maharashtra	8·7	8·7	9·9	9·0	8·80
4	Gujarat	11·6	11·1	12·0	10·5	7·47
5	Andhra Pradesh . . .	2·6	3·0	3·5	3·2	2·30
6	Tamil Nadu . . .	3·7	3·9	4·7	4·5	3·92
7	Punjab & Haryana . .	7·6	7·8	8·3	7·0	9·81P 5·81H
8	Madhya Pradesh . .	4·1	4·1	4·3	3·8	2·66
9	Mysore	4·2	4·3	5·1	4·8	3·27
10	Rajasthan	3·6	3·9	4·4	3·9	4·04
11	Kerala	3·8	4·0	5·2	5·1	3·41
12	Orissa	2·5	2·7	2·9	2·9	1·96
13	West Bengal . . .	6·1	6·8	7·5	6·7	5·19
14	Assam	5·6	6·3	5·1	5·4	3·86
15	Pondicherry . . .	11·6	10·8	11·2	11·0	8·39
16	Jammu & Kashmir . .	4·7	6·7	3·1	5·1	N.F.
17	Delhi	26·0	23·2	25·6	24·1	N.F.
18	Himachal Pradesh . .	4·4	3·9	4·2	8·3*	N.F.
19	Manipur	2·4	2·4	1·7	2·1	N.F.
20	Tripura	2·9	2·7	2·8	2·9	N.F.
	ALL INDIA .	5·0	5·1	5·7	5·2	4·25

* For reconstituted Himachal Pradesh.

P—Punjab

H—Haryana

APPENDIX 21

(*Vide* Paragraph 4·12)

Statement showing per capita consumption of sugar in selected countries in 1967

Name of the Country	(Kgs. Raw value) Per capita consumption-1967
France	37·2
East Germany	32·9
West Germany	36·1
Italy	27·9
Poland	39·4
United Kingdom	52·2
U.S.S.R.	45·8
Canada	50·1
United States of America	48·0
Cuba	78·3
Mexico	36·1
Puerto Rico	40·1
Argentina	36·0
Ceylon	22·2
India	5·0
Japan	22·2
Pakistan	5·3
Philippines	17·4
Mauritius	40·5
South Africa	42·7
U.S.R. (Egypt)	16·1
Australia	56·4
Hawaii	58·4
World Average	18·9

Source : International Sugar Council Year Book—1967.

APPENDIX 22

(*Vide* Paragraph 4.17)

Destination-wise and variety-wise exports of sugar from 1966-67 *to* 1968-69

(Quantity in '000 Tonnes)
(Value in Lakh Rs.)

Countries	Centrifugal						Refined						Total					
	1966-67		1967-68		1968-69		1966-67		1967-68		1968-69		1966-67		1967-68		1968-69	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Canada	39	132	72	328	..	..	..	..	..	..	..	..	39	132	72	328	..	..
Malaysia	68	225	..	..	..	..	..	..	..	..	..	..	68	225	..	..	..	..
U.K.	79	207	78	458	25	219	..	..	..	..	..	..	79	207	78	458	25	219
U.S.A.	55	433	78	809	74	789	..	..	..	..	..	..	55	433	78	809	74	789
France	21	68	..	..	..	..	..	..	..	..	..	..	21	68	..	..	..	..
Hong Kong	5	14	..	..	..	..	..	..	..	..	..	..	5	14	..	..	..	..
Iran	35	119	..	..	..	..	..	..	..	..	..	..	35	119	..	..	..	..
Iraq	16	51	..	..	..	..	..	..	..	..	..	..	16	51	..	..	..	..
Lebanon	10	35	..	..	..	..	..	..	..	..	..	..	10	35	..	..	..	..
Nepal	1	4	..	..	..	..	Neg.	4	..	..	Neg.	2	1	8	..	..	Neg.	2
Singapore	..	2	..	..	..	..	5	17	..	..	..	..	5	19	..	..	..	..
Vietnam	10	32	..	..	..	..	..	..	..	..	..	..	10	32	..	..	..	..
Zambia	10	4	..	..	..	..	..	..	..	..	..	..	10	4	..	..	..	..
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ceylon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*Adjustments for revised total figures	..	34	..	..	..	..	..	1	..	..	..	..	..	35	..	..	..	..
TOTAL	349	1360	228	1595	99	1008	5	22	..	..	..	2	354	1382	228	1595	99	1010

Neg = Negligible.

*Note = Country-wise break down for the revised figures of total export is not available.

Source : Monthly Statistics of "Foreign Trade of India".

APPENDIX 23

(*Vide* Paragraph 4·18)

Variety-wise break up of export of Sugar

Year	Quantity ('000 Tonnes)					Total Value in (Lakh Rs.)
	Centri-fugal	Unre-fined	Refined	Unclassi-fied	Total	
1957 . .	..	..	..	147	147	1157
1958 . .	..	..	..	38	38	170
1959 . .	..	..	..	17	17	75
1960-61 . .	..	..	..	58	58	248
1961-62 . .	..	..	..	284	284	1455
1962-63 . .	..	20	..	398	418	1701
1963-64 . .	..	216	..	216	432	2573
1964-65 . .	..	247	..	35	282	1893
1965-66 . .	289	..	22	..	311	1134
1966-67 . .	349	..	5	..	354	1382
1967-68 . .	228	..	..	..	228	1595
1968-69 . .	99	..	..	..	99	1010

Source : Monthly Statistics of "Foreign Trade of India".

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APPENDIX 24

(*Vide* Paragraph 4·20)

Average estimated F.o.b. realisation on our exports to various destinations from 1965 *to* 1968

(F. o. b. export price per tonne)

Country	1965	1966	1967	1968
	Rs.	Rs.	Rs.	Rs.
U.K.				
N.P.Q.	625·23	654·32	1002·48	861·00 (approx.)
O.A.Q.	309·63	322·15	382·50	
Average	415·87	407·70	583·47	
U.S.A.	577·49	471·95	993·53	1063·00 (approx.)
Canada	259·38	273·75	361·22	
Malaya	259·99	307·00	..	..
South Vietnam	..	298·51	..	..
Hong Kong	..	247·98	..	..
Iran	..	322·37	..	..
Iraq	..	322·12	..	..
Zambia	..	271·74	..	..
France	..	304·91	..	..
Lebanon	..	321·30	..	..
South Korea	235·25	..	..	..
Persian Gulf	284·28	..	..	..
AVERAGE	412·67	389·80	635·14	962·00

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Source : ISMA, Export Agency.

APPENDIX 25

(*Vide* Paragraph 5·1)

Share of Major States in the All India Production of Gur and Sugar

(Figures in percentages to all India total)

State	1962-63		1963-64		1964-65		1965-66		1966-67	
	Gur	Sugar	Gur	Sugar	Gur	Sugar	Gur	Sugar	Gur	Sugar
SUB-TROPICAL										
Uttar Pradesh .	46·5	39·5	45·2	43·1	46·7	38·3	46·8	39·0	42·0	33·1
Punjab . . .	8·6	2·9	8·5	2·7	9·4	3·0	4·8	2·1	4·6	1·6
Bihar . . .	5·3	7·9	4·9	9·3	5·7	12·0	5·0	10·5	4·7	9·8
Madhya Pradesh .	1·6	1·5	1·2	0·8	1·5	0·1	1·5	1·0	1·5	0·4
Assam . . .	1·1	0·2	1·0	0·2	1·0	0·2	0·9	0·3	1·1	0·3
TOTAL .	63·1	52·0	60·8	56·1	64·3	53·6	59·0	52·9	53·9	45·2
TROPICAL										
Maharashtra . .	11·0	24·8	10·5	21·2	8·4	20·2	8·7	21·9	11·2	29·6
Andhra Pradesh .	8·8	8·2	10·3	9·2	10·1	9·4	9·0	8·4	9·0	6·8
Mysore . .	6·3	6·0	6·6	4·5	5·0	5·6	5·1	4·2	6·8	3·8
Madras . .	5·0	4·8	6·0	5·6	5·8	6·6	5·9	6·5	7·9	8·3
TOTAL .	31·1	43·8	33·4	40·5	29·3	41·8	28·7	41·0	34·9	48·5
OTHERS .	5·8	4·2	5·8	3·4	6·4	4·6	12·3	6·1	11·2	6·3

Source:—Bulletin on Food Statistics issued by the Directorate of Economics and Statistics, Ministry of Food, Agriculture, Community Development and Co-operation.

APPENDIX 26

(*Vide* Paragraph 5.8)

Note regarding Parity Price of Sugar and Gur

Assuming that cane contains 12% sugar, the total (potential) sugar in one tonne of cane would be 1.2 Qtls.

As against this 1.2 Qtls. of total (potential) sugar in cane, in the manufacture of white sugar the quantity of sugar available, on the basis of 79% overall recovery will be 0.95 Qtls. only, and 0.25 Qtls. of sugar will be lost in processing. The approximate details are given as under :

Cane	1 tonne (10 Qtls.)
Sugar in case (potential)	1.2 Qtls.
Sugar recovered	0.95 Qts.
Sugar lost in bagasse	0.11 Qtls.
Sugar lost in F. Cake	0.01 Qtls.
Sugar lost in Molasses	0.12 Qtls.
Unknown loss	0.01 Qtls.
Total loss	0.25 Qtls.

In the manufacture of gur the extraction on weight basis is only about 60%, 40% being bagasse with pol around 8%. The all India average production of gur per tonne of cane is 1.10 Qtls. only. The average analysis of gur is as under :

Brix	96.0
Pol	76.8
Purity	80.0

Thus the total sugar in gur produced from one tonne of cane is 0.845 Qtls. only, 0.355 Qtls. of sugar having been lost in bagasse and in processing. The approximate details are as under :

Cane	1 tonne
Sugar in cane (potential)	1.2 Qtls.
Gur produced	1.10 Qtls.
Total sugar in gur	0.845 Qtls.
Bagasse produced	4 Qtls.
Pol Percentage bagasse	8.0
Total loss of sugar	0.355 Qtls. (0.32 Qtls. in bagasse (0.035 Qtls in processing)

To establish a relative parity value of the two products, *viz.*, white sugar and gur we have to consider the price of the two at the same sweetening level. This can only be established by considering the price of the two at the same sugar content. We have noticed that 0.845 quintal of sugar is present in 1.10 quintal of gur. Therefore one quintal of sugar will be present in $\frac{1.10}{0.845}$ *i.e.* 1.30 quintal of gur the price of which is Rs. 116 only (at Rs. 90 per quintal of gur). To arrive at the "Parity Price" of the two, these quantities are to be multiplied by their respective market price and their ratio determined.

Thus with the price of gur at Rs. 90 per quintal and that of sugar at Rs. 175 per quintal (levy price—inclusive of excise duty) the "Parity Price" of Gur and Sugar will be as under :

1.3 × 90 : 1 × 175 *i.e.* 1 : 1.5 (inclusive of excise) &

1.3 × 90 : 1 × 142.3 *i.e.*. 1 : 1.2 (exclusive of excise).

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APPENDIX 27

[*Vide* Paragraph 5.8]

Index Number of Wholesale Prices

(Base : 1952-53= 110)

Calendar year average	Food-grains*	Sugar	Gur	Sugar and Gur	Oil-seeds	All commodities
1	2	3	4	5	6	7
1950	91.5	97	202	163	13.67	109.0
1951	102.3	104	146	131	142.6	120.0
1952	99.1	103	98	100	100.0	102.3
1953	99.6†	96	138	123	122.7	104.1
1954	80.8	105	133	122	100.8	99.6
1955	69.7	95	85	88	79.4	91.5
1956	89.8	95	98	97	114.9	102.7
1957	98.6	104	105	105	122.4	108.7
1958	102.8	120	125	123	123.7	111.0
1959	103.5	122	155	143	131.2	115.5
1960	103.0	127	145	139	144.9	122.9
1961	99.7	127	118	121	157.8	125.8
1962	105.3	128	143	138	154.0	127.2
1963	111.0	136	207	181	150.3	132.5
1964	137.5	150	215	191	188.0	148.3
1965	148.8	152	170	163	229.1	161.3
1966	167.4	160	183	175	282.9	183.5
1967(P)	218.9	177	418	329	304.3	211.6

*Arrived at by combining Cereals and Pulses sub-groups by weighted average.

†Relates to 9 months only.

(P) Provisional and subject to revision.

Source : Bulletin on Food Statistics, February 1968 (Eighteenth Issue), Directorate of Economics & Statistics, Ministry of Food, Agriculture, Community Development and Co-operation.

APPENDIX 28

[*Vide* Paragraph 5.10]

Export of Cane Jaggery (Gur) from the year 1965-66 *to* 1968-69 (*April—March*)

Year	Quantity (tonnes)	Value (Rs.)
1965-66	3166	1,710,651
1966-67	2186	1,761,651
1967-68	103	239,424
1968-69	516	887,332

Source : Monthly Statistics of the Foreign Trade of India.

APPENDIX 29

(*Vide* Paragraph 5·11)

Selected Economic Indicators of gur, khandsari and sugar

(Figures in Million tonnes unless otherwise specified)

Year	Total Sugarcane production	Utilisastation of cane for miscellaneous uses	Net availability of cane for sugar, gur and khandsari	Utilisation of net available cane for		Production		Consumption			Per capita consumption per annum in kilogram			Price indices (Base 1952-53=100)		
				Sugar	Gur and khandsari	Sugar	Gur and khandsari	Sugar	Gur & khandsar	Total of sugar, gur and khandsari	Sugar	Gur and khandsari	Total of sugar, gur and khandsari	Sugar	Gur	Sugar and gur
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1950-51 .	69	9	60	11	49	1·1	3·4	1·1	3·4	4·5	3·0	13·3	16·3	97	202	163
1951-52 .	75	9	66	16	50	1·5	3·3	1·2	3·4	4·6	3·2	13·3	16·5	104	146	131
1952-53 .	62	8	54	13	41	1·3	3·0	1·7	3·0	4·7	4·5	10·8	15·3	103	98	100
1953-54 .	54	7	47	10	37	1·0	2·7	1·8	2·7	4·5	4·9	9·8	14·7	96	138	123
1954-55 .	71	9	62	16	46	1·6	3·2	1·8	3·1	4·9	4·5	11·6	16·1	105	133	122
1955-56 .	73	9	64	19	45	1·9	3·1	2·0	3·1	5·1	5·0	11·2	16·2	95	85	88
1st Plan Average	**67.0**	**8.4**	**58.6**	**14.8**	**43.8**	**1.5**	**3.1**	**1.7**	**3.0**	**4.7**	**4.4**	**10.7**	**15.1**	**100.6**	**120.0**	**112.8**
1956-57 .	83	10	73	21	52	2·1	5·1	2·0	5·1	7·1	5·9	12·8	17·8	95	98	97
1957-58 .	84	10	74	20	54	2·0	5·3	2·1	5·3	7·4	5·1	12·9	18·0	104	105	105
1958-59 .	86	11	75	20	55	2·0	5·5	2·1	5·5	7·7	5·0	12·9	17·9	120	125	123

1959-60 .	91	11	80	25	55	2.5	5.4	2.1	5.4	7.5	4.8	12.8	17.6	122	155	143
1960-61 .	111	14	97	31	66	3.0	6.5	2.1	6.5	8.6	4.8	14.9	19.7	127	145	139
2nd Plan Average	**91.0**	**11.2**	**79.8**	**23.4**	**56.4**	**2.3**	**5.6**	**2.1**	**5.6**	**7.7**	**4.9**	**13.3**	**18.2**	**114**	**126**	**121**
1961-62 .	104	13	91	28	63	2.7	6.3	2.6	6.3	8.9	5.8	14.0	19.8	127	118	121
1962-63 .	94	11	83	21	62	2.2	6.2	2.5	6.1	8.6	5.4	13.3	18.7	128	143	138
1963-64 .	105	15	92	26	66	2.6	6.6	2.3	6.6	8.9	5.0	14.0	18.9	136	207	181
1964-65 .	120	13	105	33	72	3.2	7.2	2.4	7.3	9.7	5.1	14.9	20.0	150	215	191
1965-66 .	120	15	105	37	68	3.6	6.9	2.8	7.3	10.1	5.7	14.0	19.7	152	170	163
3rd Plan Average	**109**	**13.4**	**95**	**29**	**66.2**	**2.9**	**6.6**	**2.5**	**6.7**	**9.2**	**5.4**	**14.0**	**19.4**	**139**	**172**	**159**
1966-67 .	93	11	82	22	60	2.2	6.1	2.7	6.1	8.8	5.2	12.0	17.2	160	183	175
1967-68 .	97	12	85	22	63	2.2	6.3*	2.1	6.3*	8.4	4.3	12.3*	16.6	177	418	329

Sources : (i) Directorate of Economics and Statistics for cane production and utilisation of cane for sugar manufacture. Percentage for utilisation of gur have been worked out after deducting 12 per cent for "other uses".

(ii) Bulletin on Food Statistics issued by the Directorate of Economics and Statistics for price indices which are for calendar years.

(iii) Development Programme for sugar industry for IV Plan for production of gur and khandsari.

(iv) Sen Commission and Development Programme for Sugar for IV Plan for per capita consumption of sugar, gur and khandsari.

(v) Sen Commission and Directorate of Sugar and Vanaspati for sugar consumption and Indian Sugar Year Book for gur and khandsari consumption.

*Estimated.

APPENDIX 30

[*Vide* Paragraph 7.8]

Ex-factory sugar prices fixed by Government for ISS D-29 grade from time to time since April 1963

(Price per quintal in Rs.)

Area	As on 17-4-63	As on 18-11-63	As on 22-5-64	As on 12-11-64	As on 6-3-65	As on 24-3-66	As on 20-10-66
Uttar Pradesh	108.50	..	..	..	..	..	..
(a) *East U. P.*	..	..	120.25	118.75	118.75	126.35	127.70
(i) Part A (30 factories)	..	111.25	..	..	..	..	..
(ii) Part B (2 factories)	..	116.00	..	..	..	..	..
(b) *West U. P.*							
(i) Part A (19 factories)	..	116.50	131.00	129.25	135.00	137.35	135.50
(ii) Part B (21 factories)	..	115.25	123.00	121.25	127.00	129.35	129.35
(iii) Part C	..	..	120.50	118.75	118.75	127.10	127.10
(iv) Part D	..	..	113.25	116.00	116.00	124.35	124.35
North Bihar	108.50	..	120.00	118.75	118.75	126.35	129.20
(i) Part A (9 factories)	..	118.00	..	..	..	..	..
(ii) Part B (15 factories)	..	112.75	..	..	..	..	..

South Bihar	109.85	122.00	134.00	129.25	129.25	137.35	139.80
Punjab	109.85	118.50	132.50	129.25	129.25	137.35	134.55
West Bengal.	111.20	116.50	119.00	118.75	118.75	126.35	126.35
Assam	113.85	116.50	127.00	126.00	126.00	137.35	138.70
Orissa	110.50	116.50	114.00	123.00	123.00	131.35	133.80
Rajasthan	109.85	116.00	138.00	129.25	129.25	137.35	133.00
Madhya Pradesh	109.85	118.00	124.50	123.00	124.50	135.35	135.35
Maharashtra	109.85	115.00	116.00	116.00	116.00	124.35	124.35
Gujarat	112.50	118.00	116.00	118.75	..	..	..
(i) Part A	..	..	..	..	126.00	129.35	131.25
(ii) Part B	..	..	..	..	118.75	124.35	124.35
Andhra Pradesh	109.85	..	118.00	118.75	..	128.35	132.20
(i) Part A	..	117.00	..	..	120.25	..	..
(ii) Part B	..	115.00	..	..	118.75	..	..
Tamil Nadu	111.20	115.00	116.00	123.00	123.00	131.35	138.60
Mysore	111.20	115.00	116.00	116.00	116.00	(i) A—124.35 (ii) B—127.35	A—126.85 B—127.35
Kerala	111.20	115.00	116.00	123.00	123.00	131.35	136.85
Pondicherry	111.20	115.00	116.00	123.00	123.00	131.35	140.85
Haryana	..	..	..	..	..	137.35	134.55

Area	As on 1-2-67	As on 16-3-67	As on 28-6-67	As on 3-7-67	As on 14-7-67	As on 26-7-67	As on 16-11-67
East U. P.	139.10	..	139.07	..	..	..	139.07
West U. P.—							
Part A	145.85	..	160.32	..	..	..	160.32
Part B	138.80	..	147.37	..	..	..	147.37
Part C	135.66	..	140.83	..	..	..	140.83
Part D	130.80	..	136.61	..	..	..	136.61
North Bihar	141.50	..	139.88	..	..	..	139.88
South Bihar	145.30	..	187.10	..	..	..	187.10
Punjab	140.05	..	152.58	..	..	..	152.58
Haryana	137.70	..	142.25	..	..	..	142.25
West Bengal	131.65	..	138.61	..	..	..	138.61
Assam	151.00	..	..	149.38	..	.	149.38
Orissa	140.05	..	..	..	149.05	..	149.05
Rajasthan	144.80	..	159.52	..	..	..	159.52
Madhya Pradesh	144.25	..	171.91	..	..	..	171.91
Gujarat—							
Part A	143.05	..	..	..	144.97	..	144.97
Part B	131.80	..	..	..	134.38	..	134.38

Maharashtra	126.35	129.30	..	..	132.56	..	132.56
Mysore—							
Part A	130.95	..	..	..	133.62	..	133.62
Part B	139.40	..	..	..	142.31	..	142.31
Andhra Pradesh	143.15	..	..	..	161.57	..	161.59
Tamil Nadu	143.85	..	..	..	..	..	143.85
Kerala	159.65	..	..	..	170.57	..	170.57
Pondicherry	137.50	153.10	..	..	..	162.19	162.19

APPENDIX 30-A

[*Vide* Paragraph 7.8]

Changes in Zone-wise prices of sugar produced during 1967-68

(Rs. per quintal)

Zone	States/Districts	1967-68 Production			1968-69 Production		
		As on 8-12-67	As on 31-7-68	As on 18-4-69	As on 12-12-68	As on 5-3-69	As on 29-7-69
1	2	3	4	5	6	7	8
I	Gujarat, Maharashtra, North Mysore and North Andhra Pradesh	145.00	139.02	135.76	142.66	140.23	141.30
II	Orissa, rest of Andhra Pradesh, South Mysore, Madras, Pondicherry and Kerala . .	161.00	153.85	154.00	158.27	159.43	161.14
III	Meerut, Muzaffarnagar and Buandshar Districts of West Uttar Pradesh, Punjab, Rajasthan and Madhya Pradesh . .	169.50	155.65	156.21	164.22	166.75	175.28
IV	Central and rest of West Uttar Pradesh	156.00	154.70	155.04	155.27	155.74	151.29
V	East Uttar Pradesh, Bihar and West Bengal	158.00	156.22	156.91	155.93	156.55	156.55@
VI	Assam	167.50	165.72	168.60	165.43	168.24	168.24

@Price in respect of one unit namely, Lakshmi Devi Sugar Mills has been revised to Rs. 153.21 per quintal with effect from 1-8-1969.

Source : Ministry of Food, Agriculture, Community Development and Co-operation.

APPENDIX 31

(*Vide* paragraph 9.1)

TARIFF COMMISSION

GOVERNMENT OF INDIA

Cost proformae

FROM I

Statement showing cost of production of sugar for the latest two years ended 1965/66 *and* 1966/67

1. GENERAL PARTICULARS

1.1. Name of factory.

1.2. Location of :
   (a) factory,
   (b) Head Office.

1.3. Constitution : *Public Ltd., Co./Private Ltd., Co./Co-operative Society/Partnership/Proprietary.

1.4. Products manufactured :
   (i) Sugar,
   (ii) *Others*—(Specify name of each)
   (iii) ..
   (iv) ..

2. WORKING RESULTS

2.1. Crushing season covered by the latest two years 1965/66 and 1966/1967

2.2. Registered daily crushing capacity (Metric Tonnes)

2.3. Clarification Process.

2.4. Date of start of crushing.

2.5. Date of finish of crushing.

2.6. Total Cane crushed (Quintals)

2.7. Total hours crushed.

2.8. Total net sugar made (Quintals)

2.9. Average recovery of sugar per cent cane.

2.10. Percentage of each grade of sugar produced.

2.11. Reduced overall extraction.

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*Strike out whichever is not applicable.

3. SUMMARY OF WORKS COST OF PRODUCTION FOR THE LATEST TWO YEARS

Period 1965-66

Serial No.	Particulars	Form No.	Total Amount Rs.	Cost per quintal of net sugar made Rs.
1	Cane	II		
2	Other raw materials, if any . . .	III		
3	Power, Steam and Manufacturing Stores	IV		
4	Salaries and Wages	V		
5	Packing	VI		
6	Repairs and Maintenance . . .	VII		
7	Depreciation (at income tax rates) .	VIII		
8	Overheads	IX		
	TOTAL .			
9	*Less* Credit for Receipts . . .	X		
10	Net works cost of production . .			

N.B.:—(i) Figures should be reported as under :

- (a) Total Amounts correct to nearest rupee.
- (b) Quantities correct to nearest quintals.
- (c) Percentages correct to two decimal places.
- (d) Cost of production per quintal sugar in rupees correct to two decimal places.

(ii) Similar cost data may kindly be furnished for 1966/67 also alongside, the above figures for 1965/66.

FORM NO. II

COST OF CANE

Name of the Factory .... Season 1965/66 & 1966/67

				Outstation Cane						
Sl. No.	Particulars	Unit	Gate cane	Rail	Road		Own Farm cane	Total	Average rate	Cost per tonne of sugar
					Contractor	Own				
1	2	3	4	5	6	7	8	9	10	11
									Rs.	Rs.
	A. CANE PRICE									
1	(a) Quantity purchased .	Quintals								
	(b) Average price per quintal	Rs.								
	(c) Amount paid . .	Rs.								
2	*Own Farm Cane* :									
	(a) Quantity (in quintals) .	Quintals								
	(b) Farm Expenditure (*Vide* Annexure) . . .	Rs.								
3	(i) Premium paid for better varieties . . .	Rs.								
	(ii) Other payments for quality	Rs.								
4	Commission paid . .	Rs.								

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1	2	3	4	5	6	7	8	9	10	11
5	Harvesting expenses . .	Rs.								
6	Loading and Unloading Charges	Rs.								
7	Transport charges . .	Rs.								
8	Other expenses at Centres (Staff, Stores, etc.) . .	Rs.								
	B. DEVELOPMENT WORK									
9	Supply and Development staff	Rs.								
10	Other development expenses (including contribution for road construction, etc.) .	Rs.								
	C. CESS, LEVIES ETC.									
11	Cane Cess	Rs.								
12	Other levies (e.g., Rates, local tolls, etc.) to be specified. .	Rs.								
13	TOTAL	Rs.								
14	Total cane received at the factory	Quintals								

N.B. : (1) Harvesting expenses are to be shown if the cane is purchased ex-field (standing) and the harvesting etc. is done by the factory (as in the case of Co-operative Factories).

(2) Details of item 2(b) should be given separately as annexure.

(3) Furnish figures separately for two seasons, *viz.*, 1965/66 & 1966/67.

FORM III

Name of Factory................

Season 1965/66 & 1966/67

Cost of Raw Materials other than Cane

Sl. No.	Item	Quantity (Quintals)	Total Amount Rs.	Cost per quintal of Sugar (Rs.)
1	*Raw Materials :*			
	(i) Gur			
	(ii) Khandsari			
	(iii) Other Raw Materials (Please specify each)			
2	Other expenses on above, if any.			
3	Total			

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FORM IV

Name of the Factory .... Season 1965/66 & 1966/67

POWER, STEAM AND MANUFACTURING STORES

Sl. No.	Item	Units	During the season (......days)		During the off season (......days)		Total		Cost per tonne of sugar made
			Quantity	Value Rs.	Quantity	Value Rs.	Quantity	Value Rs.	
1	*A. POWER :								
	Power :								
	(i) Power	KW Hrs.							
	(ii) Light	KW Hrs.							
**2	*Steam* (if purchased) :								
	(i) Coal	Tonnes							
	(ii) Fire-wood (Other materials—specify separately) . . .	Tonnes							
3	*Water* (if purchased)	1000 Litres							
	TOTAL (A) . .								
	B. MANUFACTURING STORES :								
	(i) Lime	Tonnes							

	(ii) Limestone	Tonnes
	(iii) Sulphur	Tonnes
	(iv) Coke	Tonnes
	(v) Superphosphate	Tonnes
	(vi) Chemicals (Caustic Soda, Soda ash, Hydros, Blue etc.)	Tonnes
	(vii) Laboratory Chemicals and Apparatus	
	(viii) Belting	
	(ix) Filter Cloth	Sq. Mts.
	(x) Lubricants	Tonnes
	(xi) Greases	Tonnes
	(xii) Other Stores (to be specified) .	
	TOTAL (Manufacturing Stores) (B) .	
5	GRAND TOTAL (A + B) . .	

N.B. : (i) Indicate the number of days in "Season" and "Off Season" separately.

(ii) Cost of various items of stores, etc., should include not only the cost paid to suppliers but also transport, freight and handling up to the factory.

(iii) Stores used for repairs and maintenance should not be shown here but under "Repairs and Maintenance"—Form VII.

(iv) Stores used for additions to Plant and Machinery and Building etc., of a capital nature should not be shown in this form.

(v) All details of stores used to be obtained from Stores Ledger and total issues agreed with General Ledger account mentioned against the item.

(vi) Only expenses on Superphosphate relating to manufacture to be shown here. Superphosphate used on farm etc., to be excluded and shown under relevant account.

*(vii) If own power is generated a power cost statement should be prepared as for steam which should *inter alia* show the quantity of power purchased, if any, and the amount paid for. The rate of power and light should be weighted average rate.

**(viii) If steam is raised a separate cost statement should be prepared showing the expenditure on (i) Fuels (like coal, fuel oil, fuel wood, Bagasse), (ii) Wages, (iii) Salaries, (iv) Repairs and maintenance, (v) Consumable Stores.

FORM V

Name of the Factory..Season $\frac{1965/66}{1966/67}$

SALARIES AND WAGES

Section A—Direct (for staff attending to sugar work only)

Sl. No.	Item	Season(...... ....days)		Off season (........days)		Total	
		No.	Amount paid Rs.	No.	Amount paid Rs.	No.	Amount paid Rs.
1	Cane Weighment staff at the factory.						
2	Engineering and workshop Staff.						
3	Manufacturing Staff . .						
4	Office Staff working inside the factory premises (Stores, Time Office, Contract Labour etc.)						
5	Other Staff working outside the factory premises (excluding Cane Weighment Staff, Weighment Staff at Outstation Centres).						
6	Retainer Allowance . .						
7	Payment for overtime work .						
8	Workmen's Compensation Insurance.						
9	Contribution towards Provident Fund.						
10	Net Rent & Other allowance (to be specified).						
11	Gratuity						
	TOTAL of A.						

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Section B—*Indirect* (for common staff attending to work of sugar and other products *e.g.* Distillery, Confectionery etc.

Sl. No.	Item	No. of persons	Total Rs.	Allocated to sugar	
				Per cent	Amount Rs.
1	Works Managerial . . .				
2	Technical				
3	Office and other staff . . .				
4	Provident Fund				
5	Overtime				
6	Gratuity				
	TOTAL of 'B' . .				
7	Total of 'A' and 'B' . . .				

N.B. : (i) Indicate the period of season and off season by 'days'

(ii) Wages should cover all wages paid in the factory excepting Bonus and pensionbenefits etc.

(iii) Retainer allowance paid to Factory Staff to be reported separately against S. No. 6 of Section A.

(iv) Wages paid for packing, stitching, stocking, loading etc. of sugar should be reported in this form under Manufacturing staff.

(v) Wages incurred on items of capital expenditure *e.g.* to plant, machinery, building, etc. should not be shown in this form.

(vi) Cane supply, development staff and purchase staff at Outside Centres/depot sshould not be included here but in Form II (Cost of Cane).

FORM VI

Name of the factory...Season— 1965/66 / 1966/67

PACKING

Sl. No.	Details	Unit	Quantity	Total Amount	Cost per Quintal of sugar
				Rs.	Rs.
1	Total Sugar bagged . . .	Tonnes			
2	Total gunny bags used . .	Nos.			
3	Other packing material used. (Sutli, Seal etc.)	Rs.			
4	Other charges (to be specified) . . .	Rs.			
	TOTAL .	Rs.			

N.B. : Wages for packing, stitching, stacking, loading etc. of bags should not be included in this form. These are to be reported under Form V "Salaries and Wages".

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FORM VII

Name of the factory.......................................Season— 1965/66 / 1966/67

REPAIRS AND MAINTENANCE

Sl. No.	Item	Building Rs.	Plant and Machinery Rs.	Others Rs.	Total Rs.
I.	**DEPARTMENTAL—**				
	(i) Engineering Stores & Spare Parts .				
	(ii) Other materials used (Cement, bricks, sand etc.)				
	(iii) Incidental expenses (Freight etc.)				
	TOTAL .				
II.	**OUTSIDE AGENCIES—**				
	(i) Payment made as per bills . .				
	(ii) Transport & handling . . .				
	(iii) Other incidental expenses . .				
	TOTAL .				
II.	GRAND TOTAL				

N.B. (i) Repairs conducted by the Sugar Mills themselves to be shown under Item I.

(ii) All expenses incurred on outside repairs to be shown under Item II. All transport, freight and handling charges connected with outside repairs to be shown here.

(iii) Cost of spare parts etc., used in repairs and maintenance which has a lasting effect for more than 2 years should be detailed with values as a foot note to the form.

(iv) Details of quantities and values of items costing more than Rs. 250 each should be shown separately in an Annexure for plant and Machinery under item I(i) and II(i).

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FORM VIII

DEPRECIATION

Name of the Factory .... Season 1965/66 & 1966/67

Item	Film projector	Buildings					Plant and Machinery	Lorries, Truck and Trailers	Tramways Rly. siding
		Factory		Non-Factory		Temporary			
		I Class	II Class	I Class	II Class				
1	2	3	4	5	6	7	8	9	10
Percent of depreciation									
1. (a) Written down value for 1965/66 as per Income Tax (Beginning of the year) . .									
(b) Written down value of sales or write-off . .									
(c) Additions during 1965/66 .									
(d) TOTAL (a+b×c) .									
(e) Depreciation on written down value 1965/66 . . .									
(f) Depreciation on additions .									
(g) TOTAL DEPRECIATION (e+f) 1965/66									

2. (a) Written down value for 1966/67 . . . . .

(b) Written down value of sale or write-off . . .

(c) Additions during 1966/67 .

(d) TOTAL (a—b+c) . .

(e) Depreciation on written down value 1966/67 . . .

(f) Depreciation on additions .

(g) TOTAL DEPRECIATION (e+f) 1966/67 . . . .

3. (*See* foot note 5).

N.B.:—1. Depreciation on "additions" to plant and machinery should be calculated on the basis of completed months as per Income-tax rules.

2. If any of the assets are used for purposes other than Sugar manufacture, share based on the circumstances in each case should be apportioned to Sugar and that portion shown here with a suitable explanatory remarks.

3. Written down values with the respective assets should be arrived at by taking into account only the depreciation allowances as per Income-tax rules.

4. Written down value of sale or write-off of fixed assets should be taken from the written down value at the beginning of the respective years.

5. Depreciation may be calculated for the next 3 years on the above basis separately after taking into account any additions that may be contemplated.

6. Kindly indicate in a separate Annexure the original cost of the plant, machinery and other assets individually.

FORM VIII—*Concld.*

DEPRECIATION—*Concld.*

Name of the factory .... Season 1965/66 & 1966/67

Item	Light Rly.	Transport	Tools	Labora-tory	Electrical Machine-ries	Furniture and Fixtures	Live Stock	Other	Total
		Motor Cycles/ Cars							
1	11	12	13	14	15	16	17	18	19
Percent of depreciation									
1. (a) Written down value for 1965/66 as per Income Tax (Beginning of the year) . .									
(b) Written down value of sales or write-off . . .									
(c) Additions during 1965/66 .									
(d) TOTAL (a—b+c) . .									
(e) Depreciation on written down value 1965/66 . .									
(f) Depreciation on additions .									
(g) TOTAL DEPRECIATION (e+f) 1965/66									

2. (a) Written down value for 1966-67 . . . . .

(b) Written down value of sale or write-off . . . .

(c) Additions during 1966-67 .

(d) TOTAL (a—b+c) . .

(e) Depreciation on written down value 1966-67 . . .

(f) Depreciation on additions .

(g) TOTAL DEPRECIATION (e+f) 1966-67 . . . .

3. (*See* Foot note 5)

N.B.—1. Depreciation on "additions" to plant and machinery should be calculated on the basis of completed months as per Income-tax rules.

2. If any of the assets are used for purposes other than Sugar manufacture, share based on the circumstances in each case should be apportioned to Sugar and that portion shown here with a suitable explanatory remark.

3. Written down values with the respective assets should be arrived at by taking into account only the depreciation allowances as per Income-tax rules.

4. Written down value of sale or write-off of fixed assets should be taken from the written down value at the beginning of the respective years.

5. Depreciation may be calculated for the next 3 years on the above basis separately after taking into account any additions that may be contemplated.

6. Kindly indicate in a separate Annexure the original cost of the plant, machinery and other assets individually.

FORM IX

Name of the factory .... Season $\frac{1965\text{-}66}{1966\text{-}67}$

OVERHEADS

Sl. No.	Item	Total (Rs.)	Cost per Quintal of Sugar Rs.
I	*Administrative Expenses :*		
(i)	Share of Head Office charges		
(ii)	Directors' fees and other remuneration		
(iii)	Payment to Technical consultants and others for expert advice		
II	*Other Expenses :*		
(i)	Rent Rates and Property Taxes.		
(ii)	Insurance (excluding Workmen's Compensation Insurance)—		
	(a) Property and fixed assets		
	(b) Stocks and Stores		
	(c) Other items (if any)		
(iii)	Printing and stationery		
(iv)	Postage, Telegrams and Telephones		
(v)	Car and Lorry expenses (General)		
(vi)	Travelling Expenses		
(vii)	Audit Fees		
(viii)	Legal Expenses		
(ix)	Entertainmement (including Guest House Expenses)		
(x)	Advertisement		
(xi)	Repairs etc. to Office Equipment . Furniture and other miscellaneous items		
(xii)	Staff Welfare, recreation and Schools, Medical expenditure		
(xiii)	Uniforms, etc.		
(xiv)	Others		
	TOTAL		

NOTE :—

(i) If the expenses are for the entire factory covering other activities also, indicate the proportion (%) to be charged to sugar and the basis for the same.

(ii) Donations, Charities and other ex-gratia payments are not to be included under costs.

(iii) Commission on profit or sales paid to Managing Agents, Directors and Senior Staff should not be included under costs.

(iv) Head Office Expenses.—In case where more than one factory is managed by one Head Office, only a reasonable proportion of charges of the Head office to be debited under item I (i). This will be on the basis of total turnover of each factory or other equitable basis.

FORM X

Name of the Factory ....

Season $\frac{1965\text{-}66}{1966\text{-}67}$

MISC. RECEIPTS

Sl. No.	Item	Quantity	Total Amount	Cost per Quintal of Sugar
1	2	3	4	5
1	@Molasses			
2	Filter Mud			
3	@Bagasse			
4	Dunnage			
5	Other items (to be specified)			
	(i)			
	(ii)			
	(iii)			
	(iv)			
	TOTAL .			

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NOTE :—

1. The receipts should be net receipts obtained after deducting from gross receipts the expenditure incurred on selling *e.g.*, Commission or Brokerage paid, loading charges, transport and freight, incidental expenses, etc.

2. Rents received and expenses incurred on Building etc., facilities including depreciation thereon should both be not shown in this Statement.

@Production of items 1 and 3 should be shown at the bottom of this statement.

FORM XI

Name of the Factory..........

Season 1965-66/1966-67

SELLING AND DESPATCHING EXPENSES

Sl. No.	Item	Quantity sold Quintals	Total Amount Rs.	Per quintal of sugar Rs.
1	2	3	4	5
1	Commission to selling agents . . .			
2	Commission to others			
3	Freight and Transport			
4	Loading & unloading charges . .			
5	Godown rent (other than factory Godown).			
6	Other incidental charges, if any (*e.g.* octroi, other taxes, rebagging expenses) . .			
	TOTAL .			

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APPENDIX 32

(*Vide* Paragraph 9.1)

Capacity of plant for cane, duration of season in days, sugar production, recovery etc. during 1966-67

Brief name of the unit costed	Process	Registered capacity per day	Actual average crushing per day of 24 hours	Gross season	Crushing days (22 hours basis)	Cane crushed during the year	Total sugar produced during the year	Recovery of sugar from cane
1	2	3	4	5	6	7	8	9
		Tonnes	Tonnes	Days	Days	Quintals	Quintals	Percentage
I. *Maharashtra*								
(1) Sansar	D.S.	1270	1207	152	135	1499,010	165928	11·07
(2) Belapur	D.S.	1500	1355	191	167	2080,628	232214	11·16
(3) B. Maharashtra	D.S.	1321	1201	122	97	1066,214	117359	11·01
(4) K. Kesari	D.S.	1016	1395	145	117	1495,857	177064	11·83
(5) Lakshmiwadi	D.S.	1016	1226	186	195	2195,201	233616	10·64
(6) Gangapur	D.S.	1016	1019	148	134	1251,990	139326	11·13
(7) Rahuri	D.S.	1500	1171	192	185	1990,686	231664	11·64
(8) Bidri	D.S.	1016	1361	146	128	1596,348	194586	12·14
(9) Ganeshnagar	D.S.	1750	1128	181	175	1810,717	198479	10·96
(10) Pravaranagar	D.S.	2000	1575	194	179	2590,412	284584	10·99
(11) Sangli	D.S.	2600	1976	174	163	2944,350	345055	11·72
Weighted Average . .		1455	1329	166	152	1865,674	210898	11·30

1	2	3	4	5	6	7	8	9
II. *Mysore*								
(1) Ugarkhurd	D.S.	2000	1267	155	138	1605,742	190089	11·84
(2) Shimoga	D.S.	1500	976	99	77	688,349	74795	10·87
(3) Kampli	D.S.	1500	931	142	113	968,297	102943	10·63
Weighted Average . .		1667	1058	132	109	1087,463	122609	11·27
III. *Uttar Pradesh (East)*								
(1) Basti	D.S.&D.C.	1500	934	71	65	554,967	57809	10·42
(2) Barabanki	D.S.	1000	921	94	72	609,372	59696	9·80
(3) Siswabazar	D.S.	1000	821	155	143	1074,881	105801	9·84
(4) Seorahi	D.S.	1524	1152	119	119	1256,305	123778	9·85
(5) Balrampur	D.S.	1219	1065	78	667	653,285	64618	9·89
(6) Padrauna	D.S.	1800	1272	135	118	1380,979	134033	9·71
(7) Tulsipur	D.S.	1200	1116	105	95	971,736	97394	10·02
(8) Purtabpore	D.S.	1300	1061	94	89	869,441	85289	9·81
(9) Ramkola (P.b.)	D.S. & D.C.	2000	2064	130	122	2304,685	233789	10·14
(10) Anandnagar	D.S.	1500	1075	87	84	830,071	82737	9·97
Weighted Average . .		1404	1148	107	97	1050,572	104494	9·94

IV. *Uttar Pradesh (West)* :								
(1) Mohiuddinpur	D.S.	1158	940	65	39	337,850	29757	8·81
(2) Doiwala	D.S. & D.C.	1000	732	147	139	932,743	88358	9·47
(3) Daurala	D.S. & D.C.	2540	1456	92	90	1194,377	108456	9·08
(4) Simbhaoli	D.S. & D.C.	2032	2145	86	49	956,529	85611	8·95
(5) Shamli	D.S.& D.C.	3810	2560	85	78	1831,537	151749	8·29
Weighted Average . .		2106	1567	95	79	1050,607	92786	8·83
V. *Uttar Pradesh (Central)* :								
(1) Rosa	D.S.	1000	906	88	66	545,298	51262	9·40
(2) Biswan	D.S.	1500	955	91	82	720,426	71936	9·98
(3) Neoli	D.S.	1500	1286	81	73	864,910	84740	9·80
(4) Maholi	D.S. & D.C.	1524	1395	87	82	1051,538	102593	9·76
(5) Bazpur	D.S. & D.C.	1600	1467	118	118	1589,331	158453	9·97
(6) Baheri	D.S.	1727	1553	125	116	1648,894	162422	9·85
(7) Razabulund	D.S. & D.C.	3048	2463	82	63	1411,184	135357	9·59
(8) Gola	D.S.	3658	4071	143	138	5139,405	497066	9·67
Weighted Average . .		1946	1760	91	92	1621,373	157979	9·74

1	2	3	4	5	6	7	8	9
VI. *Bihar* (*North*)								
(1) Bagaha	D.S.	1500	945	138	132	1146,867	114602	9·99
(2) New Savan	D.S.	914	888	79	62	502,290	47999	9·56
(3) Hassanpur	D.S.	1321	1176	82	78	844,239	85633	10·14
(4) Righa	D.S.	1219	1076	68	66	651,694	66868	10·26
(5) Gopalganj	D.S.	1219	1217	111	98	1095,760	107452	9·80
(6) Motihari	D.S.	1500	1032	113	107	1013,846	99340	9·80
(7) Chanpatia	D.S.	1250	1114	128	115	1168,542	120660	10·33
(8) Hathua	D.S. & D.C.	1173	1648	87	66	1003,764	95727	9·54
Weighted Average . .		1261	1137	101	90	928,375	92285	9·94
VII. *Bihar* (*South*)								
(1) Bihta	D.S.	1219	813	55	37	274,959	22906	8·33
VIII. *Tamil Nadu*								
(1) Ambur	D.S.	1250	922	163	145	1227,104	118486	9·66
(2) Amravathi	D.S.	1250	930	233	178	1517,902	137690	9·07
(3) Thiru	D.S.	1219	1128	141	130	1347,907	116853	8·70
(4) Aruna	D.MC.	1270	1230	128	100	1132,002	106406	9·40
(5) Sakthi	D.S.	2000	1152	242	192	2026,400	167498	8·27
Weighted Average . .		1398	1072	181	149	1450,281	129387	8·92

IX. *Andhra Pradesh*								
(1) Kirlampudi	D.S.	1016	883	115	47	381,900	31834	8·33
(2) Etikoppaka	D.S.	1500	985	110	80	720,909	59399	8·24
(3) Amadalavalasa	D.S.	1600	1002	56	41	375,472	37660	10·03
(4) Palakol	D.S.	1016	1181	117	91	980,693	88780	9·05
(5) Chagallu	D.S.	3000	1109	191	163	1656,916	152396	9·20
(6) Seethanagaram	D.S.	800	545	118	85	422,690	33990	8·05
(7) Vuyyuru	D.S.	3750	2926	151	135	3626,570	306318	8·45
Weighted Average		1812	1233	123	92	1166,450	101482	8·70
X. *Punjab*								
(1) Bhogpur	D.S. & D.C.	1016	1134	126	112	1163,128	91251	7·85
(2) Dhuri	D.S. & D.C.	1016	909	114	94	784,202	57210	8·57
Weighted Average		1016	1022	120	103	973,665	79,230	8·14
XI. *Haryana*								
Rohtak	D.S.& D.C.	1500	1152	92	88	929,006	74719	8·04

1	2	3	4	5	6	7	8	9
XII. *M.P.*								
Debra	D.S. & D.C.	1250	695	37	35	224,666	30585	9·16
XIII. *Rajasthan*								
Bhupalsagar	D.S.	1016	858	50	26	202,358	19931	9·85
XIV. *Gujurat*								
Gandevi	D.S.	1016	594	92	87	472,950	43700	9·24
XV. *Orissa*								
Aska	D.S.	1219	878	89	74	593,578	51241	8·65
XVI. *Assam*								
Baruabamangaon . . .	D.S.	813	893	105	85	696,221	64766	9·30
XVII. *Kerala*								
Tiruvalla	D.S.	508	869	120	110	872,387	67787	7·77
Weighted Average (for 67 costed units) . .		1523	1240	120	103	1201,814	120599	10·03

APPENDIX 33

(*Vide* Paragraph 9.3)

Statement showing the actual cost of production of sugar during 1966-67 season broken down by elements for the average/grade of sugar

(Rs. per quintal)

Brief name of the unit	Cost of Cane					Salaries & wages	Power Fuel & Stores
	Cane	Other charges	Develop-ment Exp.	Cess levies etc.	Sub-Total		
1	2	3	4	5	6	7	8
1. Maharashtra	57·03	8·25	0·57	4·27	70·12	6·07	1·62
2. Andhra Pradesh	68·06	0·81	0·45	5·75	75·07	9·32	2·33
3. Mysore	54·96	1·30	0·25	6·59	63·10	9·70	2·46
4. Tamil Nadu	62·02	2·12	1·77	5·90	71·81	8·32	1·95
5. Kerala	70·13	0·34	4·68	1·46	76·61	17·08	1·06
6. U. P. (East)	57·07	5·74	0·37	5·07	66·25	13·05	3·03
7. U. P. (West & Central)	60·46	5·44	0·52	5·32	71·74	12·17	3·15
8. Bihar (North & South)	56·68	3·40	0·75	5·17	66·00	13·68	3·67
9. Gujarat	61·90	0·37	1·05	6·15	69·47	9·88	3·23
10. Orissa	63·93	2·64	2·79	..	69·36	10·25	2·44
11. Punjab	67·84	4·66	1·14	2·98	76·62	12·34	4·42
12. Haryana	67·16	4·05	0·55	3·02	74·78	13·50	3·45
13. Madhya Pradesh	59·93	13·10	2·97	4·67	80·67	45·76	8·71
14. Rajasthan	57·78	10·34	1·22	..	69·34	27·97	8·95
15. Assam	64·66	5·45	..	..	70·11	14·94	3·51
Average (of 67 units)	59·57	4·89	0·69	4·92	70·07	10·18	2·59

APPENDIX 33—*contd.*

(*Vide* Paragraph 9.3)

Statement showing the actual cost of production of sugar during 1966-67 *season broken down by elements for the average/grade of sugar*

(Rs. per quintal)

Brief name of the unit	Repairs Maintenance	Other overheads (net)	Depreciation	Packing	Total (6 to 12)	Less Credit for byproducts		Net Average cost per quintal
						Molasses	Others	
1	9	10	11	12	13	14	15	16
1. Maharashtra	1·94	1·83	5·41	2·74	89·73	0·20	0·13	89·40
2. Andhra Pradesh	4·32	2·54	7·94	2·56	104·08	0·74	0·30	103·04
3. Mysore	3·55	2·62	5·15	2·70	89·28	0·22	0·43	88·63
4. Tamil Nadu	3·00	2·50	8·83	2·54	98·95	1·18	0·04	97·73
5. Kerala	2·13	3·83	1·84	2·72	105·27	0·35	0·72	104·20
6. U.P. (East)	3·70	2·79	3·20	2·55	94·57	0·27	0·12	94·18
7. U.P. (West & Central)	4·41	2·70	4·63	2·70	101·50	0·28	0·20	101·02
8. Bihar (North & South)	3·42	4·60	3·10	2·52	96·99	0·24	0·18	96·57
9. Gujarat	3·67	1·68	10·75	2·83	101·51	1·22	0·19	100·10
10. Orissa	2·07	1·68	24·64	2·47	112·91	2·53	..	110·38
11. Punjab	3·16	1·97	5·16	2·55	106·22	0·31	0·01	105·90
12. Haryana	3·61	1·00	6·46	2·44	105·24	0·75	0·06	104·43
13. Madhya Pradesh	9·88	9·65	14·50	2·79	171·96	0·23	0·03	171·70
14. Rajasthan	6·05	6·95	7·98	1·88	129·42	1·27	..	128·15
15. Assam	2·89	2·76	7·53	2·33	104·07	0·40	0·06	103·61
Average (of 67 units)	3·29	2·60	5·41	2·64	96·78	0·58		96·20

APPENDIX 34

(*Vide* **Paragraph** 9.72)

Actual conversion charges in 1966-67 *per quintal of sugar—'D-*29*' Grade broken down by cost elements based on* 120 *days duration* (*of* 22 *hours per day*) *and* 10 *per cent Recovery*

States/Zones	Wages & Salaries (including cane centres	Stores & Repairs	Power & Fuel	Packing	Over Heads	Depreciation	*Less* Grade differentials and credits	Net Conversion charges	Major Elements Related to Total	
									Salaries & Wages	Stores & Repairs
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	%	%
1. Maharashtra .	9·56	3·91	1·01	2·80	2·15	7·34	(—)0·03	26·74	35·8	14·6
2. U.P. East . .	12·50	6·04	1·01	2·58	2·02	2·74	(—)1·74	25·15	49·7	24·0
3. U.P. West . .	12·00	5·77	1·34	2·66	1·75	2·89	(—)1·54	24·87	48·3	23·2
4. U.P. Central .	9·93	5·86	0·84	2·70	2·00	3·84	(—)1·84	23·33	42·6	25·1
5. Bihar—North .	12·16	5·12	1·59	2·53	2·76	2·48	(—)1·68	24·96	48·7	20·5
6. Bihar—South .	15·36	4·47	4·03	2·48	3·51	1·12	(—)0·40	30·57	50·2	14·6
7. Mysore . .	11·07	4·56	1·38	2·67	2·60	5·59	(—)0·68	27·19	40·7	16·8
8. Tamil Nadu .	10·21	3·84	1·15	2·55	2·52	9·09	(—)1·54	27·82	36·7	13·8
9. Andhra Pradesh .	8·06	3·77	1·45	2·61	1·91	5·75	(—)0·70	22·85	35·3	16·5
10. Punjab . .	11·10	4·69	0·72	2·56	0·84	3·76	(—)1·93	21·74	51·1	21·6
11. Haryana . .	9·08	3·81	1·28	2·44	2·64	4·05	(—)1·72	19·58	46·4	19·5
12. Rajasthan . .	13·02	6·43	6·33	2·53	2·55	2·15	(—)3·03	29·98	43·4	21·5
13. Gujarat . .	7·57	4·48	1·61	2·83	1·23	7·74	(—)2·56	22·90	33·1	19·6
14. Orissa . . .	7·50	2·58	1·27	2·47	1·02	14·64	(—)2·45	27·03	27·8	9·5
15. Madhya Pradesh .	21·46	6·65	3·04	2·79	4·15	4·74	(—)1·91	40·92	52·4	16·3
16. Kerala . . .	15·49	2· 5	0·34	2·72	2·31	1·33	(—)1·13	23·91	64·8	11·9
17. Assam . .	12·52	3·15	2·06	2·33	2·01	5·30	(—)0·54	26·83	46·7	11·7
Weighted Average . (66 units)	10·82	4·91	1·25	2·64	2·10	4·75	(—)1·27	25·20	42·9	19·5

APPENDIX 35

(*Vide* Paragraph 9·12·1)

Estimated Fair Conversion Charges & Ex-works Prices of Sugar for different Zones for Future (i.e. next 3 years—1969-70 *to* 1971-72) *based on the average recovery and average duration of the past 5 years* (1963-64 *to* 1967-68) *with Government Notified Minimum Prices of Cane of* 1968-69 *as adjusted for every* 0·1 *per cent recovery over* 9·4 *per cent*

(Per quintal of Sugar)

Zones	Average Recovery	Average Season (of 22 hours per day)	Conversion Charges—Based on Average recovery & duration of 5 years							
			Wages & Salaries	Stores, Fuel & Power	Repairs & Maintenance	Packing charges	Overheads	Cane Centres & Cane Devpt.	Depreciation (I. T. rates)	Cane Transport (net)
1	2	3	4	5	6	7	8	9	10	11
	%	Days	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Punjab	8·46	98	16·55	4·88	2·54	2·69	1·15	2·57	3·15	1·40
2. Haryana	8·70	125	11·70	3·49	2·63	2·57	0·75	1·36	3·60	1·53
3. Rajasthan	8·67	78	20·21	11·91	2·86	2·66	3·74	5·23	2·33	3·98
4. West U. P.	8·99	117	16·22	5·55	2·83	2·78	1·75	1·37	2·32	1·19
5. Central U.	9·61	133	11·21	2·98	3·92	2·84	2·22	1·37	2·14	1·85
6. East U. P.	9·68	115	15·94	3·48	4·31	2·70	2·25	1·31	1·74	0·80
7. North Bihar	9·58	110	15·69	4·25	3·31	2·65	3·18	1·76	1·65	0·98
8. South Bihar	9·15	64	27·38	9·17	5·71	2·60	3·86	1·48	1·38	1·43
9. Gujarat	10·42	150	6·94	3·10	2·70	2·96	1·05	1·04	3·70	..
10. Madhya Pradesh	9·12	74	34·80	8·33	4·65	2·92	6·17	4·57	4·73	5·66
11. Maharashtra	11·56	149	7·72	1·84	2·07	2·91	1·66	1·30	3·28	2·25
12. Mysore	10·50	137	11·10	3·06	2·97	2·82	2·34	0·61	2·76	0·10
13. Andhra Pradesh	9·31	121	10·12	2·78	3·56	2.74	2·16	0·54	3·53	0·32
14. Tamil Nadu & Pondicherry	8·69	167	9·73	2·19	2·78	2·70	2·39	2·04	4·68	1·03
15. (i) Orissa (ii) Assam (iii) Kerala (iv) West Bengal	8·73	89	17·75	2·66	2·42	2·65	2·65	4·32	6·44	0·87

APPENDIX 35—*contd.*

(*Vide* Paragraph 9·12·1)

Estimated Fair Conversion Charges & Ex-works Prices of Sugar for different Zones for Futvre (i.e. next 3 years—1969-70 *to* 1971-72) *based on the average recovery and average duration of the past 5 years* (1963-64 *to* 1967-68) *with Government Notified Minimum Prices of Cane of* 1968-69 *as adjusted for every* 0·1 *per cent recovery over* 9·4 *per cent*

(Per quintal of Sugar)

Zones	Conversion charges—Based on average recovery & duratoin of 5 years									
	Total (4 to 11)	*Less* Adjustments		Net Total (12 *less* (13 +14)	Return & Rehabilitation@ Rs. 10·5 plus Rs. 2·0	Selling Expenses	Bonus & M.A. charges	Total Conversion charges (15 to 18)	Cane and related costs	Ex-works Price of Sugar (19 plus 20)
		Credits	Grade differential							
1	12	13	14	15	16	17	18	19	20	21
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Punjab	34·93	0·30	1·68	32·95	12·50	0·15	0·70	46·30	91·86	138·16
2. Haryana	27·63	0·75	1·07	25·81	12·50	0·15	0·50	38·96	89·73	128·69
3. Rajasthan	52·92	1·43	1·79	49·70	12·50	0·25	0·84	63·29	85·89	149·18
4. West U. P.	34·01	0·29	1·27	32·45	12·50	0·15	0·74	45·84	89·69	135·53
5. Central U.	28·53	0·50	1·32	26·71	12·50	0·15	0·74	40·10	85·87	125·97
6. East U. P.	32·23	0·39	1·35	30·79	12·50	0·15	0·70	44·14	84·84	128·98
7. North Bihar	33·47	0·42	1·28	31·77	12·50	0·15	0·81	45·23	85·14	130·37
8. South Bihar	53·01	0·33	0·10	52·58	12·50	0·15	1·17	66·40	88·30	154·70
9. Gujarat	21·49	1·25	1·26	18·98	12·50	0·15	0·30	31·93	84·07	116·00
10. Madhya Pradesh	71·83	0·26	1·67	69·90	12·50	0·10	2·95	85·45	85·79	171·24
11. Maharashtra	23·03	0·38	(+)0·42	23·07	12·50	0·20	0·40	36·17	78·29	114·46
12. Mysore	25·76	0·61	0·03	25·12	12·50	0·10	0·75	38·47	87·13	125·60
13. Andhra Pradesh	25·75	(1,05	(+)0·26	25·96	12·50	0·20	0·69	38·35	84·53	122·88
14. Tamil Nadu & Pondicherry	27·54	1·35	0·37	25·82	12·50	0·10	0·52	38·94	96·55	135·49
15. (i) Orissa (ii) Assam (iii) Kerala (iv) West Bengal	39·76	1·34	0·23	38·19	12·50	0·12	0·75	51·56	85·79	137·35

APPENDIX 36

(*Vide* Paragraph 9.12.2)

Computation of Cane Price per quintal of Sugar for future (1969-70 *to* 1970-71) *based on the Government Notified Prices for* 1968-69 *and applied to the average recovery of sugar for the past* 5 *years* (1963-64 *to* 1967-68)

		Per Quintal of Cane					
Zones	Driage on Cane	Average Recovery of 5 years	Govt. price of Cane	Co-Op. Society's Commission	Cess/ Purchase tax	Total (4 to 6)	Per Quintal of Sugar
1	2	3	4	5	6	7	8
	%	%	Rs.	Rs.	Rs.	Rs.	Rs.
1. Punjab . .	0·41	8·46	7·37	0·13	0·24	7·74	91·86
2. Haryana . .	0·86	8·70	7·37	0·13	0·24	7·74	89·73
3. Rajasthan .	1·27	8·69	7·37	..	..	7·37	85·89
4. West U. P. .	0·41	8·99	7·37	0·15	0·51	8·03	89·69
5. Central U.P .	0·76	9·61	7·53	0·15	0·51	8·19	85·87
6. East U. P. .	0·28	9·68	7·53	0·15	0·51	8·19	84·84
7. North Bihar .	0·46	9·58	7·48	0·13	0·51	8·12	85·14
8. South Bihar .	0·87	9·15	7·37	0·13	0·51	8·01	88·30
9. Gujarat .	..	10·42	7·96	..	0·80	8·76	84·07
10. Madhya Pradesh	1·74	9·12	7·37	..	0·32	7·69	85·79
11. Maharashtra .	..	11·56	8·55	..	0·50	9·05	78·29
12. Mysore . .	..	10·57	8·01	..	1·20	9·21	87·13
13. Andhra Pradesh	..	9·31	7·37	..	0·50	7·87	84·53
14. Tamil Nadu & Pondicherry .	..	8·69	7·37	..	1·02	8·39	96·55
15. (i) Orissa (ii) Assam (iii) Kerala (iv) West Bengal.	0·02	8·74	7·37	0·04	0·07	7·48	85·79

[NOTE—(i) Government notified Minimum price of Rs. 7·37 per quintal of cane is taken into account with adjustments for every 0·1 per cent recovery over 9·4%.

(ii) Driage is taken at actuals of 1966-67.]

APPENDIX 37

(*Vide* Paragraph 9.11.2)

Table showing the depreciation and margin of return based on (i) *a proforma calculation of* 12½ *per cent return on capital employed and* (ii) *an uniform return of Rs.* 10·50 *per quintal*

(Per quintal of sugar)

	Depreciation	Average return @ 12·5 per cent on capital employed	Total (2 + 3)	Total of depreciation with return @ Rs. 10·5 per quintal
(1)	(2)	(3)	(4)	(5)
	Rs.	Rs.	Rs.	Rs.
1. Punjab.	3·15	11·04	14·19	13·65
2. Haryana	3·60	10·40	14·00	14·10
3. Rajasthan	2·33	11·72	14.05	12 .83
4. West U. P.	2·32	8·95	11·27	12·82
5. Central U. P.	2·14	8·23	10·37	12·64
6. East U.P.	1.74	8.39	10.13	12.24
7. North Bihar	1·65	8·36	10·01	12·15
8. South Bihar	1·38	11·30	12·68	11·88
9. Gujarat	3·70	9·10	12·80	14·20
10. Madhya Pradesh	4·73	15·73	20·46	15·23
11. Maharashtra	3·28	8·86	12·14	13·78
12. Mysore	2·76	9·13	11·89	13·26
13. Andhra Pradesh	3·53	9·98	13·51	14·03
14. Tamil Nadu & Pondicherry	4·68	11·14	15·82	15·18
15. (i) Orissa (ii) Assam (iii) Kerala (iv) West Bengal	6·44	15·52	21·96	16·94

APPENDIX 38

(*Vide* Paragraph 10·8)

Technical Efficiency of Sugar Factories in India since 1960-61

Annexure I indicates the state-wise data on technical efficiency of the Indian Sugar Industry since 1960-61. Following are the salient features emerging from the same.

Milling efficiency.—The country's average milling efficiency which stood at around 93·11 till 1963-64 has declined slightly to 92·96 in 1964-65 and further to 92·81 in 1965-66 but rose again in 1966-67 to 93·06. This is lower than that in 1960-61 when it stood at 93·12.

As compared to some of the foreign countries, it was a shade better in 1960-61 than in Pakistan (90·50), Louisiana (91·20) and British Guiana (92·89) but poorer in comparison with Queensland (95·21) and Jamaica (94·12). Hawaii (93·83) which was more or less the same as that of India in 1960-61 rose to 95·29 in 1963-64 and 1964-65.

While slight increase is noticeable in case of West Bengal and Orissa, there is a declining trend in the States of Gujarat and Madhya Pradesh. In the rest of the States these figures are more or less steady.

Boiling House efficiency.—The All India Boiling House efficiency curve shows on the whole, a declining trend. It had gone down to 89·93 in 1966-67 as compared to 90·04 in 1960-61, 90·05 in 1963-64 and 90·07 in 1965-66. It was as low as 88·54 in 1961-62 and 89·84 in 1964-65.

The boiling house performance of the Indian Sugar factories is poorer when compared to 94·59 for Hawaii in 1963-64 and 1964-65 and 92·77 for British Guiana and 92·75 for Jamaica in 1960-61 as also that of Pakistan (91·89) in 1961-62.

During the year 1966-67 it was the highest in the case of Orissa at 92·34 followed by 92·10 for Punjab and 91·92 for Assam and ranged between 89·26 (Bihar) and 91·85 (Rajasthan) in case of the remaining States.

Overall efficiency.—As a result of the declining trend in the milling efficiency and boiling house efficiency, the average overall efficiency of the sugar industry has been evincing a slight downward trend. It had gone down to 83·69 in 1966-67 as compared to 83·85 in 1960-61, but was slightly better when compared to 83·52 in 1964-65 and 83·59 in the subsequent year.

Thus the Indian sugar industry's overall efficiency compares unfavourably with that of 94·59 for Hawaii and 84·83 for British Guiana in 1964-65 and 86·92 for Jamaica in 1960-61. It is lower than that in Pakistan (83·24) in 1961-62. (Later data for these countries are not available with us) (Annexure II).

During the year 1966-67 it was highest in case of West Bengal (86·81) followed by Orissa (85·64), Assam (84·64), West Uttar Pradesh (84·35) and Maharashtra (84·02). It ranged between 82·00 (Pondicherry) and 83·96 (Central U. P.) in respect of the remaining States.

Extra fuel consumption.—It may be noted that the industry's extra fuel consumption has been steadily on the decline. It had come down from 3·09 in 1960-61 to 1·22 in 1966-67. The average for 1966-67 would have been still lower but for the fact that the extra fuel consumption in that year was abnormally high at 6·37 for Assam, 4·68 for Madhya Pradesh, 3·57 for Rajasthan, 2·56 for Bihar and 2·28 for Western Uttar Pradesh. It ranged between 1 and 2 in case of East Uttar Pradesh, Andhra Pradesh and Mysore and was less than 1 in case of the rest of the States except Kerala where it was nil.

Lime as percentage of Cane.—Similarly, lime consumption has decreased appreciably and stood at 0·170 in 1966-67 as compared to 0·214 in 1960-61 and 0·230 in 1962-63.

Sulphur as percentage of Cane.—There has also been a marked decline in the consumption of sulphur, the figure came down from 0·067 in 1960-61 to 0·039 in 1965-66 but increased slightly to 0·046 in the subsequent year.

Quality of Sugar.—The quality of sugar in case of 30 colour series has shown a steady improvement from 1962-63 onwards while for the 29 colour series the production of which was highest in the year 1960-61 , it has been decreasing correspondingly. This indicates that over these years there has been a definite improvement in the quality of the Indian sugar. (Annexure III).

सत्यमेव जयते

ANNEXURE 1

Technical Results of Different Regions in India

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
A. PUNJAB							
(i) Mill Extraction	90.67	90.38	90.98	91.25	90.89	90.47	90.45
(ii) Reduced Mill Extraction	93.06	92.58	92.87	92.84	92.73	92.78	92.70
(iii) Boiling House Extraction	85.67	83.90	87.10	86.81	85.83	85.09	86.55
(iv) Reduced B.H. Extraction	91.17	90.80	91.72	92.94	91.46	91.60	92.10
(v) Overall Extraction	77.68	75.83	79.25	79.22	78.01	76.98	78.29
(vi) Reduced Overall Extraction	84.84	84.06	85.18	86.29	84.99	84.99	85.38
(vii) Extra fuel consumption in terms of Bag % cane	1.23	0.75	0.50	1.09	0.66	0.24	0.24
(viii) Lime % Cane	0.180	..	0.120	0.220	0.199	0.213	0.16
(ix) Sulphur % Cane	0.021	0.026	0.028	0.029	0.033	0.029	0.015
B. WEST UTTAR PADESH							
(i) Mill Extraction	90.72	90.79	90.85	90.69	90.55	90.58	90.75
(ii) Reduced Mill Extraction	92.49	92.76	92.76	92.76	92.54	92.65	92.68
(iii) Boiling House Extraction	86.80	86.36	87.38	87.04	86.05	86.44	86.90
(iv) Reduced B.H. Extraction	91.20	90.48	90.47	90.88	91.16	90.95	91.01
(v) Overall Extraction	78.73	78.41	79.38	78.94	77.92	78.30	78.86
(vi) Reduced Overall Extraction	84.35	83.93	83.92	84.30	84.36	84.27	84.35
(vii) Extra fuel consumption in terms of Bag % Cane	2.20	1.85	3.72	1.97	1.58	1.17	2.28
(viii) Lime % Cane	0.180	0.179	0.141	0.175	0.199	0.194	0.170
(ix) Sulphur % Cane	0.051	0.048	0.046	0.044	0.045	0.030	0.052

C. CENTRAL UTTAR PRADESH							
(i) Mill Extraction	90.25	90.08	90.62	90.55	89.95	89.86	90.48
(ii) Reduced Mill Extraction	93.38	93.07	92.28	93.10	92.90	92.80	92.92
(iii) Boiling House Extraction	87.12	86.59	88.58	88.05	85.71	85.24	86.63
(iv) Reduced B.H. Extraction	90.41	90.99	90.36	90.40	90.10	90.23	90.36
(v) Overall Extraction	78.63	78.00	80.27	79.73	77.10	76.60	78.39
(vi) Reduced Overall Extraction	83.14	84.68	83.38	84.16	83.70	83.73	83.96
(vii) Extra fuel consumption in terms of Bag % Cane	3.48	1.40	1.19	0.90	0.28	0.85	0.34
(viii) Lime % Cane	0.203	0.213	0.176	0.198	0.213	0.158	..
(ix) Sulphur % Cane	0.074	0.084	0.060	0.069	0.075	0.041	..
D. EAST UTTAR PRADESH							
(i) Mill Extraction	90.73	90.48	90.89	90.93	90.63	90.43	90.51
(ii) Reduced Mill Extraction	93.15	93.38	93.34	93.20	93.12	92.94	92.83
(iii) Boiling House Extraction	85.44	85.25	87.58	87.47	85.83	84.62	85.74
(iv) Reduced B.H. Extraction	88.26	88.27	89.16	89.26	88.97	88.82	88.36
(v) Overall Extraction	77.52	77.13	79.60	79.53	77.79	76.63	77.60
(vi) Reduced Overall Extraction	82.21	82.43	83.22	83.19	82.85	82.55	82.02
(vii) Extra fuel consumption in terms of Bag % Cane	3.17	2.32	2.10	1.64	0.79	1.28	1.78
(viii) Lime % Cane	0.194	0.215	0.196	0.203	0.213	0.169	0.180
(ix) Sulphur % Cane	0.074	0.073	0.067	0.067	0.072	0.040	0.047
E. BIHAR							
(i) Mill Extraction	90.49	90.62	90.68	91.42	90.46	90.38	90.67
(ii) Reduced Mill Extraction	93.44	93.26	94.07	93.68	93.61	92.98	93.13

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
(iii) Boiling House Extraction	84.87	84.45	87.02	86.79	84.42	84.44	86.24
(iv) Reduced B.H. Extraction	89.11	88.91	89.12	88.83	88.97	88.99	89.26
(v) Overall Extraction	76.80	76.52	78.90	79.35	76.37	76.32	78.20
(vi) Reduced Overall Extraction	83.26	82.92	83.84	83.22	82.98	82.74	83.13
(vii) Extra fuel consumption in terms of Bag % Cane	2.34	2.44	2.08	2.62	1.49	1.32	2.56
(viii) Lime % Cane	0.201	0.203	0.188	0.215	0.226	0.168	0.215
(ix) Sulphur % Cane	0.065	0.062	0.058	0.070	0.078	0.045	0.057
F. WEST BENGAL							
(i) Mill Extraction	92.10	92.82	92.18	92.24	91.62	92.30	92.89
(ii) Reduced Mill Extraction	94.25	94.59	93.71	94.02	94.01	94.11	94.68
(iii) Boiling House Extraction	86.73	88.11	86.73	87.10	88.15	88.78	88.25
(iv) Reduced B.H. Extraction	90.80	91.12	90.85	91.03	91.54	91.70	91.69
(v) Overall Extraction	79.88	81.78	79.95	80.34	80.77	81.94	81.98
(vi) Reduced Overall Extraction	85.57	84.98	85.14	85.59	86.06	86.30	86.81
(vii) Extra fuel consumption in terms of Bag % Cane	3.17	1.22	1.94	2.01	1.27	0.65	0.37
(viii) Lime % Cane	0.200	0.170	0.144	0.152	0.150	0.119	0.140
(ix) Sulphur % Cane	0.076	0.080	0.081	0.086	0.093	0.042	0.052
G. ASSAM							
(i) Mill Extraction	90.08	89.39	90.66	89.95	91.06	90.97	91.53
(ii) Reduced Mill Extraction	91.85	91.16	92.58	91.90	92.22	92.13	92.08
(iii) Boiling House Extraction	80.74	85.64	89.05	88.25	87.20	87.57	88.65
(iv) Reduced B.H. Extraction	89.86	91.44	91.82	91.25	91.22	91.92	91.92

(v) Overall recovery	72.76	76.55	80.73	79.88	79.40	79.67	84.64
(vi) Reduced Overall Recovery	82.54	83.36	85.01	83.86	84.15	84.69	84.64
(vii) Extra fuel consumption in terms of Bag % Cane	6.57	4.31	1.06	2.27	2.09	3.23	6.37
(viii) Lime % Cane	0.200	0.270	0.260	0.262	0.200	0.110	0.130
(ix) Sulphur % Cane	0.058	0.080	0.090	0.090	0.80	0.030	0.030
H. Orissa							
(i) Mill Extraction	88.31	90.75	91.07	89.73	90.12	91.38	91.09
(ii) Reduced Mill Extraction	90.52	92.63	92.22	91.89	92.21	92.87	92.74
(iii) Boiling House Extraction	83.64	82.57	82.85	83.94	84.53	85.40	85.83
(iv) Reduced B.H. Extraction	90.24	89.40	90.78	91.23	91.89	91.86	92.34
(v) Overall Recovery	73.86	74.95	75.45	75.32	76.53	78.04	78.18
(vi) Reduced Overall Recovery	81.69	85.79	83.71	83.83	84.78	85.31	85.64
(vii) Extra fuel consumption in terms of Bag % Cane	7.22	6.18	7.55	2.71	4.38	0.78	0.70
(viii) Lime % Cane	0.173	0.170	0.177	0.177	0.191	0.183	0.170
(ix) Sulphur % Cane	0.054	0.060	0.060	0.045	0.052	0.039	0.036
I. Maharashtra							
(i) Mill Extraction	94.21	94.13	94.19	94.09	93.97	93.43	93.67
(ii) Reduced Mill Extraction	94.10	93.97	94.04	94.04	94.01	93.61	93.84
(iii) Boiling House Extraction	88.46	89.20	90.41	89.98	89.08	88.22	89.17
(iv) Reduced B.H. Extraction	89.48	89.24	90.13	90.01	89.63	89.59	89.53
(v) Overall Extraction	83.34	83.96	85.15	84.66	83.70	82.42	83.52
(vi) Reduced Overall Extraction	84.20	83.86	84.76	84.65	84.26	83.86	84.02
(vii) Extra fuel consumption in terms of Bag % Cane	3.26	2.39	1.78	1.51	0.49	1.11	0.45

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
(viii) Lime % Cane	0.213	0.230	0.193	0.189	0.179	0.150	0.130
(ix) Sulphur % Cane	0.080	0.080	0.068	0.067	0.061	0.049	0.045
J. GUJARAT							
(i) Mill Extraction	93.52	93.06	92.24	92.64	92.01	91.53	91.82
(ii) Reduced Mill Extraction	93.84	93.53	92.55	93.07	92.64	91.77	92.89
(iii) Boiling House Extraction	87.52	87.71	86.84	88.16	87.19	86.19	86.43
(iv) Reduced B.H. Extraction	90.35	90.68	90.19	90.38	90.41	89.59	89.63
(v) Overall Recovery	81.85	81.62	80.11	81.67	80.22	78.89	79.36
(vi) Reduced Overall Recovery	84.78	84.81	83.47	84.12	83.76	82.22	83.26
(vii) Extra fuel consumption in terms of Bag % Cane	1.96	3.70	3.13	1.66	0.90	0.48	0.56
(viii) Lime % Cane	0.199	0.200	0.243	0.175	0.202	0.174	0.180
(ix) Sulphur % Cane	0.078	0.090	0.082	0.075	0.079	0.062	0.057
K. ANDHRA PRADESH							
(i) Mill Extraction	91.65	92.66	91.70	91.47	91.14	90.78	91.20
(ii) Reduced Mill Extraction	92.39	93.36	92.21	92.21	92.03	91.92	92.31
(iii) Boiling House Extraction	84.29	84.47	86.89	85.97	85.19	85.78	84.50
(iv) Reduced B.H. Extraction	89.49	87.69	89.34	89.69	89.33	90.16	89.81
(v) Overall Recovery	77.25	78.27	79.67	78.64	77.64	77.37	77.71
(vi) Reduced Overall Recovery	82.68	81.87	82.38	82.70	82.21	82.88	82.90
(vii) Extra fuel consumption in terms of Bag % Cane	3.08	3.96	4.04	2.55	1.98	1.91	1.20
(viii) Lime % Cane	0.180	0.170	0.226	0.169	0.292	0.148	0.170
(ix) Sulphur % Cane	0.089	0.060	0.062	0.057	0.056	0.037	0.041

L. TAMIL NADU							
(i) Mill Extraction	92.83	92.77	93.64	92.64	92.07	92.13	91.86
(ii) Reduced Mill Extraction	93.72	93.91	94.34	93.57	93.11	93.08	92.96
(iii) Boiling House Extraction	84.65	85.22	85.34	83.35	84.19	83.69	85.16
(iv) Reduced B.H. Extraction	89.68	99.33	89.32	89.18	89.87	89.97	90.15
(v) Overall Recovery	78.58	77.98	79.92	72.22	77.51	77.10	78.23
(vi) Reduced Overall Recovery . . .	84.05	83.92	84.26	83.45	83.68	83.74	83.80
(vii) Extra fuel consumption in terms of Bag % Cane	1.65	1.39	1.65	0.59	0.42	0.62	0.72
(viii) Lime % Cane	0.158	0.165	0.149	0.142	0.161	0.112	0.120
(ix) Sulphur % Cane	0.109	0.062	0.054	0.053	0.055	0.023	0.023
M. MYSORE							
(i) Mill Extraction	90.61	91.21	91.68	91.40	90.05	90.23	92.45
(ii) Reduced Mill Extraction	91.09	91.84	91.90	91.70	90.91	90.98	92.70
(iii) Boiling House Extraction	86.56	86.94	89.17	88.94	86.54	87.64	89.16
(iv) Reduced B.H. Extraction	89.55	89.24	90.03	90.80	89.60	90.61	90.58
(v) Overall Extraction	78.43	79.30	81.75	81.28	77.93	79.03	82.42
(vi) Reduced Overall Extraction . . .	81.57	81.96	82.74	83.26	81.46	82.44	83.97
(vii) Extra fuel consumption in terms of Bag % Cane	3.46	2.93	1.64	1.52	0.98	1.18	1.23
(viii) Lime % Cane	0.223	0.210	0.162	0.203	0.187	0.162	0.220
(ix) Sulphur % Cane	0.068	0.070	0.064	0.065	0.064	0.042	0.043
N. KERALA							
(i) Mill Extraction	92.30	92.40	91.71	91.60	91.63	91.54	90.31
(ii) Reduced House Extraction . . .	92.91	92.80	92.60	92.48	92.59	92.55	92.14
(iii) Boiling House Extraction	87.05	86.36	85.98	86.14	85.36	85.54	85.08

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
(iv) Reduced B.H. Extraction	90.55	91.11	90.44	90.59	90.41	90.65	90.91
(v) Overall Extraction	80.35	79.80	78.85	78.90	78.22	78.31	76.83
(vi) Reduced Overall Extraction	84.13	84.54	83.74	83.78	83.71	83.90	83.76
(vii) Extra fuel consumption in terms of Bag % Cane	nil	nil	nil	nil	nil	0.60	nil
(viii) Lime % Cane	0.070	0.070	0.090	0.84	0.220	0.169	0.150
(ix) Sulphur % Cane	0.023	0.025	0.027	0.028	0.040	0.034	0.034
O. MADHYA PRADESH							
(i) Mill Extraction	90.82	90.93	90.70	91.19	90.65	90.37	90.06
(ii) Reduced Mill Extraction	93.03	93.07	92.80	92.79	92.29	92.22	91.79
(iii) Boiling House Extraction	84.84	84.99	85.56	85.28	84.15	83.15	85.59
(iv) Reduced B.H. Extraction	90.36	89.90	89.44	89.39	90.10	89.39	90.26
(v) Overall Extraction	77.05	77.28	77.61	77.76	76.28	75.14	77.09
(vi) Reduced Overall Extraction	84.06	83.67	83.00	83.41	83.15	82.44	82.85
(vii) Extra fuel consumption in terms of Bag % Cane	8.34	5.97	4.01	2.90	1.53	2.98	4.68
(viii) Lime % Cane	0.214	0.208	0.216	0.203	0.185	0.158	0.190
(ix) Sulphur % Cane	0.043	0.066	0.070	0.081	0.59	0.046	0.064
P. RAJASTHAN							
(i) Mill Extraction	89.82	89.10	90.38	89.81	90.46	90.25	89.15
(ii) Reduced Mill Extraction	91.30	90.76	91.61	91.51	91.25	91.97	91.68
(iii) Boiling House Extraction	84.61	85.95	85.43	84.66	86.27	83.46	83.97
(iv) Reduced B.H. Extraction	91.23	91.74	90.59	91.27	91.97	91.07	91.85
(v) Overall Extraction	75.99	76.58	72.21	76.03	78.04	75.32	74.86
(vi) Reduced Overall Extraction	83.29	83.61	82.99	83.52	83.93	83.76	84.21

(vii) Extra fuel consumption in terms of Bag % Cane	9.57	5.64	4.60	7.40	3.87	6.46	3.57
(viii) Lime % Cane	0.210	0.190	0.194	0.201	0.211	0.178	0.180
(ix) Sulphur % Cane	0.077	0.90	0.079	0.067	0.077	0.057	0.068
Q. PONDICHERRY							
(i) Mill Extraction	89.20	89.31	91.35	90.06	90.98	89.80	88.47
(ii) Reduced Mill Extraction	90.52	91.14	91.42	91.91	92.14	91.85	91.58
(iii) Boiling House Extraction	81.96	87.26	85.20	79.77	81.32	82.23	83.24
(iv) Reduced B.H. Extraction	88.90	90.41	89.98	87.67	88.18	88.08	89.54
(v) Overall Extraction	73.11	77.93	77.83	71.84	73.96	74.74	73.64
(vi) Reduced Overall Extraction	80.47	82.40	82.26	80.58	81.23	80.90	82.00
(vii) Extra fuel consumption in terms of Bag % Cane	0.55	0.20	2.33	1.39	1.39	2.11	0.32
(viii) Lime % Cane	0.153	0.130	0.178	0.183	0.233	0.153	0.200
(ix) Sulphur % Cane	0.045	0.050	0.071	0.072	0.085	0.053	0.040
ALL INDIA							
(i) Mill Extraction	91.40	91.41	91.86	91.70	91.29	91.17	91.70
(ii) Reduced Mill Extraction	93.12	93.11	93.17	93.11	92.96	92.81	93.06
(iii) Boiling House Extraction	86.32	86.33	88.13	87.43	89.19	85.97	87.09
(iv) Reduced B.H. Extraction	90.04	88.54	90.00	90.05	69.84	90.07	89.93
(v) Overall Extraction	78.90	78.91	80.96	80.18	78.68	78.38	79.87
(vi) Reduced Overall Extraction	83.85	82.63	83.58	83.85	83.52	83.59	83.69
(vii) Extra fuel consumption in terms of Bag % Cane	3.09	2.43	2.90	1.89	1.64	1.22	1.22
(viii) Lime % Cane	0.214	0.203	0.230	0.186	0.189	0.157	0.170
(ix) Sulphur % Cane	0.067	0.064	0.059	0.059	0.062	0.039	0.046

NOTE : A note regarding the definitions of some of the technical terms is enclosed.

Sourcce : National Sugar Institute, Kanpur.

Extract from

System of Technical Control for Cane Sugar Factories in India

By

The Sugar Technologists Association of India, Kanpur.

1·47 Added Water—Imbibition water or maceration water is termed added water.

1·48 *Juice Extraction*—The percentage weight of juice extracted by the Mills. In each case it should be specifically stated as to what kind of juice is meant and to which basis the percentage relates.

1·49 *Mill Extraction*—Sucrose (or pol) in mixed juice per cent sucrose (or pol) in cane. This is also termed sucross (or pol) extraction according to whether sucrose or pol has been taken into account.

1·50 Java Ratio—The percentage ratio of pol per cent cane to pol per cent first expressed juice.

1·51 Milling Loss—The pol lost in bagasse per cent fibre :

$$\frac{100 \times \text{Pol }\%\text{ bagasse}}{\text{Fibre }\%\text{ bagasse}}$$

1·52 Undiluted Juice lost in Bagasse per cent Fibre (Java)—

$$\frac{100 \times \text{Brix per cent last mill bagasse}}{\text{Brix }\%\text{ primary juice} \times \text{fibre }\%\text{ bagasse}} \times 100$$

1·53 Lost Juice per Unit Fibre—The pol lost in final bagasse expressed in terms of absolute juice per unit of fibre in cane denoted by the symbol V, where

$$\frac{V=(1-e)\ (1-f)}{f}$$

e=pol extraction recorded per unit pol in cane

f=fibre per unit cane.

1·54 Reduced Mill Extraction (Deerr) (e 12·5)—The recorded mill extraction calculated or reduced to a fibre content in cane of 12·5 per cent.

$$e\ 12\cdot5 - \frac{7-V}{7} \times 100$$

where V=lost juice per unit fibre.

1·55 Imbibition Water Per cent Fibre—

$$\frac{\text{Imbibition water per cent cane}}{\text{Fibre per cent cane.}} \times 100$$

1·56 S—J—M Formula—This formula, stated below, gives the recovery, *i.e.* the sugar in final product per cent sugar in the original material.

$$r= \frac{s\ (j-m)}{j\ (ss-m)} \times 100$$

Where :

r = recovery
s = purity of final product
j = purity of original material, and
m = purity of the molasses

1·57 *Boiling House Recovery*—Sucrose (pol) in sugar produced per cent sucrose (pol) in mixed juice.

1·58 Basic Boiling House Recovery—The theoretical boiling house recovery as calculated by the s—j—m formula in which is the gravity purity of mixed juice

$$s = 100 \text{ and } m = 28{\cdot}57$$

1·59 Boiling House Recovery Factor—The percentage ratio of the recorded boiling house recovery to the theoretical boiling house recovery as calculated by the s—j—m formula in which $s = 100$, j is the recorded purity of mixed juice and m is the recorded purity of molasses.

1·60 Equivalent Standard Granulated (ESG)—The quantity of dry pure sucrose, which could theoretically be obtained from a commercial sugar using the s—j—m formula in which $s = 100$, j is the purity of the commercial sugar and m is the recorded gravity purity of final molasses.

1·61 Boiling House Recovery (ESG)—The percentage ratio of ESG value of sugar produced, calculated as above, to the sucrose in mixed juice.

$$\frac{\text{Sucrose in sugar}}{\text{Sucrose in mixed juice}} \times 100 \times \frac{100\,(j - m)}{j\,(100 - m)}$$

Where j = purity of commercial sugar, and
m = actual gravity purity of molasses.

1·62 Boiling House Performance—The percentage ratio of boiling house recovery, ESG to the basic boiling house recovery.

1·63 Reduced Boiling House Recovery, ESG (R85)—The boiling house recovery, ESG that would have been obtained under existing conditions if the factory had worked a mixed juice of standard gravity purity of 85.

सत्यमेव जयते

ANNEXURE 2

Technical Efficiency Figures of Foreign Countries

1960-61

	India	Louisiana	Pakistan	Hawaii	Queens-land	British Guiana	Jamaica
1	2	3	4	5	6	7	8
(i) Mill Extraction	91.40	89.79	89.40	93.60	94.69	90.98	92.95
(ii) Reduced Mill Extraction	93.12	91.20	90.50	93.83	95.21	92.89	94.12
(iii) Boiling House Extraction	86.32	89.42	87.54	88.27	87.17	90.97	89.27
(iv) Reduced B.H. Extraction	90.04	..	..	..	91.08	92.77	92.75
(v) Overall Extraction	78.90	83.04	81.94	83.17	79.59	84.15	83.06
(vi) Reduced Overall Extraction	83.85	..	..	..	84.67	85.48	86.92
	1961-62						
(i) Mill Extraction	91.41	..	89.30	..	..	91.10	93.47
(ii) Reduced Mill Extraction	93.11	..	90.59	..	..	92.88	94.42
(iii) Boiling House Extraction	86.33	..	82.24	..	..	88.84	88.79
(iv) Reduced B.H. Extraction	88.54	..	91.89	..	..	91.79	..
(v) Overall Extraction	78.91	..	73.24	..	..	80.93	82.99
(vi) Reduced Overall Extraction	82.63	..	83.24	..	..	85.25	..
	1962-63						
(i) Mill Extraction	91.86	..	..	94.10	..	90.31	93.02
(ii) Reduced Mill Extraction	93.17	..	..	..	..	92.80	93.98
(iii) Boiling House Extraction	88.13	..	..	90.28	..	88.78	..
(iv) Reduced B.H. Extraction	90.00	..	..	90.08	..	91.82	..
(v) Overall Extraction	80.96	..	..	84.96	..	80.55	..
(vi) Reduced Overall Extraction	83.85	..	..	84.95	..	85.21	..

	1963-64						
(i) Mill Extraction	91.70	..	..	94.12	..	89.87	93.19
(ii) Reduced Mill Extraction	93.11	..	..	95.29	..	92.41	94.28
(iii) Boiling House Extraction	87.43	..	..	90.79	..	85.20	89.22
(iv) Reduced B.H. Extraction	90.05	..	..	94.59	..	90.24	..
(v) Overall Extraction	80.18	..	..	85.45	..	76.57	83.16
(vi) Reduced Overall Extraction	83.85	..	..	94.59	..	83.39	..
	1964-65						
(i) Mill Extraction	91.29	..	..	94.12	..	90.80	93.19
(ii) Reduced Mill Extraction	92.96	..	..	95.29	..	93.06	94.28
(iii) Boiling House Extraction	89.19	..	..	90.79	..	87.66	89.22
(iv) Reduced B.H. Extraction	89.84	..	..	94.59	..	91.16	..
(v) Overall Extraction	78.68	..	..	85.45	..	..	83.16
(vi) Reduced Overall Extraction	83.52	..	..	94.59	..	84.83	..
	1965-66						
(i) Mill Extraction	91.71	..	..	..	..	91.03	..
(ii) Reduced Mill Extraction	92.81	..	..	..	..	93.42	..
(iii) Boiling House Extraction	85.97	..	..	..	..	86.10	..
(iv) Reduced B.H. Extraction	90.07	..	..	..	..	90.79	..
(v) Overall Extraction	78.38	..	..	..	..	78.38	..
(vi) Reduced Overall Extraction	83.59	..	..	..	..	84.82	..
	1966-67						
(i) Mill Extraction	91.70	..	..	..	..	..	..
(ii) Reduced Mill Extraction	93.06	..	..	..	..	..	..
(iii) Boiling House Extraction	87.09	..	..	..	..	..	..
(iv) Reduced B.H. Extraction	89.93	..	..	..	..	..	..
(v) Overall Extraction	79.87	..	..	..	..	..	..
(vi) Reduced Overall Extraction	83.69	..	..	..	..	..	..

Source : National Sugar Institute, Kanpur.

ANNEXURE 3

Statement showing the quality of sugar produced (Year wise) by the Central Sugar Factories

Colour Series	I. S. S. Grade	Percent Total All-India Production						
		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
30	A & B — 30	..	..	10.49	15.05	2.82	3.71	2.48
	C & D — 30	..	..	34.91	48.48	57.51	52.29	59.83
	E — 30	..	..	7.44	16.88	17.78	16.99	17.77
	Total in 30 Colour Series . . .	..	..	52.84	80.41	78.11	72.99	80.08
29	A & B — 29	12.32	13.79	3.09	1.35	0.20	0.23	0.02
	C & D — 29	62.30	61.13	27.19	12.63	13.98	17.55	13.85
	E — 29	22.32	21.71	15.40	4.97	6.86	6.62	4.33
	Total in 29 Colour Series . . .	96.94	96.63	45.68	18.95	21.04	24.40	18.20
28	A & B — 28	0.32	0.11	0.03	0.03	0.03	0.01	0.00
	C & D — 28	1.77	1.34	0.71	0.24	0.39	1.16	0.47
	E — 28	0.58	0.77	0.41	0.08	0.14	0.80	0.81
	Total in 28 Colour Series . . .	2.67	2.82	1.15	0.35	0.56	1.97	1.28
	Below I.S.S.	0.39*	0.55*	0.33	0.29	0·29	0·64	0·44

*Includes Sugar of 27 Colour.

Source : National Sugar Institute, Kanpur.

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